

ST 10, 1872
continued.
1 10 0 1/4
2 10 0 1/4
3 10 0 1/4
4 10 0 1/4
5 10 0 1/4
6 10 0 1/4
7 10 0 1/4
8 10 0 1/4
9 10 0 1/4
10 10 0 1/4
11 10 0 1/4
12 10 0 1/4
13 10 0 1/4
14 10 0 1/4
15 10 0 1/4
16 10 0 1/4
17 10 0 1/4
18 10 0 1/4
19 10 0 1/4
20 10 0 1/4
21 10 0 1/4
22 10 0 1/4
23 10 0 1/4
24 10 0 1/4
25 10 0 1/4
26 10 0 1/4
27 10 0 1/4
28 10 0 1/4
29 10 0 1/4
30 10 0 1/4
31 10 0 1/4
32 10 0 1/4
33 10 0 1/4
34 10 0 1/4
35 10 0 1/4
36 10 0 1/4
37 10 0 1/4
38 10 0 1/4
39 10 0 1/4
40 10 0 1/4
41 10 0 1/4
42 10 0 1/4
43 10 0 1/4
44 10 0 1/4
45 10 0 1/4
46 10 0 1/4
47 10 0 1/4
48 10 0 1/4
49 10 0 1/4
50 10 0 1/4
51 10 0 1/4
52 10 0 1/4
53 10 0 1/4
54 10 0 1/4
55 10 0 1/4
56 10 0 1/4
57 10 0 1/4
58 10 0 1/4
59 10 0 1/4
60 10 0 1/4
61 10 0 1/4
62 10 0 1/4
63 10 0 1/4
64 10 0 1/4
65 10 0 1/4
66 10 0 1/4
67 10 0 1/4
68 10 0 1/4
69 10 0 1/4
70 10 0 1/4
71 10 0 1/4
72 10 0 1/4
73 10 0 1/4
74 10 0 1/4
75 10 0 1/4
76 10 0 1/4
77 10 0 1/4
78 10 0 1/4
79 10 0 1/4
80 10 0 1/4
81 10 0 1/4
82 10 0 1/4
83 10 0 1/4
84 10 0 1/4
85 10 0 1/4
86 10 0 1/4
87 10 0 1/4
88 10 0 1/4
89 10 0 1/4
90 10 0 1/4
91 10 0 1/4
92 10 0 1/4
93 10 0 1/4
94 10 0 1/4
95 10 0 1/4
96 10 0 1/4
97 10 0 1/4
98 10 0 1/4
99 10 0 1/4
100 10 0 1/4

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1929.—Vol. XLII.]

LONDON, SATURDAY, AUGUST 10, 1872.

{PRICE.....FIVEPENCE.
{PER ANNUM, BY POST, £1 4s.

IRON AND STEEL INSTITUTE OF GREAT BRITAIN.

This flourishing institution, which only dates so far back as the year 1868, and has already upwards of 500 of the most prominent names in connection with the iron and allied trades on its roll of members, held its fourth provincial meeting this week in Glasgow. It was at a meeting of the North of England Iron Trade, held in Newcastle in September, 1868, that the proposal to form an institution thoroughly representative of the iron and steel trades was first mooted. The project was received with great favour throughout all the iron manufacturing districts, and in a comparatively short time after the suggestion was made upwards of 200 gentlemen had intimated their willingness to become members. The first president was the Duke of Devonshire, who most efficiently discharged the duty of the office for two years, and was succeeded by Mr. Henry Bessemer, who still acts. The society holds two regular meetings in each year—one in London in the spring, and another in some iron manufacturing district during the summer—the former being the annual meeting. The provincial meetings up to this time have been held at Middlesbrough, Merthyr Tydfil, and Dudley. Glasgow was appropriately selected as the place for the fourth provincial meeting, and from the numerous ironworks in its neighbourhood, to say nothing of its gigantic engineering and shipbuilding establishments, the Scotch city offered rare facilities for furthering the interests of the Association. We may remark here that the society not only holds meetings for the discussion of papers bearing upon the trade, but by means of special committees it carries on investigations of great advantage to the trade. The work already done by the puddling committee is widely known, for through its exertions the question of mechanical puddling may be considered settled, and the members have by this means been put in early possession of all facts bearing upon this important question. A special committee is also investigating the distribution of iron ores in Great Britain.

EXHIBITION OF MODELS, &c.

One of the most interesting adjuncts of the meetings of the institute is the exhibition of models, which is generally both instructive and attractive. If the extent of the exhibition at Glasgow has been surpassed on previous occasions—and this may be said to be a moot point—it is doubtful whether it has ever been equalled in point of interest. Many of the mechanical appliances illustrated are entirely new; others have never hitherto travelled beyond Scotland; while a third assortment are so well known to the public that their display on this occasion might have been dispensed with altogether. We shall, in going over the list of articles exhibited, begin with those of a purely mechanical character, presuming that four apartments in the corporation galleries, immediately adjacent to the lecture hall in which the papers were read and discussed, had been set apart for the purposes of the exhibition.

"Napier's Differential Gear for Reversing Rolling Mills is, like Stevenson's appliance for the same purpose, a comparatively unknown although exceedingly ingenious and valuable contrivance. It was described at a meeting of the Institution of Engineers and Shipbuilders in Scotland, and published in their Transactions for last winter. The differential friction clutch is an arrangement for transmitting power through a differential friction brake, which is adjusted so as to be either self holding, or approximately so, according to what may be most suitable for the machinery to be driven. This clutch is adapted for driving nearly every kind of machinery, but it is more especially suited for transmitting considerable power at high velocities, and it has been applied with great success for working planing and other reversing machinery. Unlike other friction clutches it requires no power, or very little, to keep it in gear. Such are the advantages claimed for Mr. Napier's invention, which will be found more fully described elsewhere, the patentee having read a paper on the subject before the institute.

With reference to Mr. Stevenson's mode of reversing rolling-mills, which has been put in practical operation with the most successful results at both the Blochairn and Monkland works, we require to say nothing, seeing that the patentee, in his paper (which will be found in our special report of proceedings), went fully into its merits. His model was a very excellent one, and so constructed that the rationale of the process could be understood by the merest novice.

Mr. A. Spencer's (of West Hartlepool) patent rotary puddling-machine, of which a neat model was exhibited, has already been described in the Journal, as has also Mr. Thomas Whitwell's fire-brick hot-blast stove, of which there are now nearly 150 in operation or being constructed in America and Europe.

Mr. H. F. Boyd, of Low Walker, placed on view illustrations of his patent invention, by means of which screws of any size can be forged with threads complete, and in such a way that the fibre of the iron is in no way injured, but is made to enter into each particular thread, and bind it to the central portion of the bolt. Mr. Boyd, by his process, is enabled to forge these bolts from 1/2 in. in diameter up to any size, with great rapidity. These bolts, from the smallest to the largest, are all forged with the utmost exactness, and are as smooth on the outside as if cut, and, having the natural skin of the iron preserved, are much less liable to be acted upon by damp, or by the acids contained in the wood into which they are screwed. They seem especially suitable substitutes for the ordinary twisted spikes for railway chairs, since they are not so liable to be shaken loose. They also have a very powerful hold in the wood, through the pitch of the threads being equal to the diameter, although if they were cut so they would be rendered useless. This increase in the holding power has been proved by Lloyd's test at Low Walker to be 30 per cent., which enables a screw of but moderate length to obtain a hold to the wood equal to the cohesive strength due to its full diameter. Mr. Boyd has already made large quantities at his factory, at Low Walker, for the Corporation of Newcastle-upon-Tyne, for the new quay tramway; for J. W. Jennings's patent railway chairs, on the London and North-Western Railway; for Sir W. G. Armstrong and Co.; and for various shipbuilders, colliery owners, and contractors. Another new mechanical contrivance, of considerable interest to all who are engaged in marine engineering or iron shipbuilding, is Trotman's patent galvanic feed-box, for boilers of marine engines having surface condensers, which was exhibited this week, for the first time, in Scotland. In practice it is found difficult to take advantage to the full extent of the system of surface condensation, owing to the injury to the boiler by the action of the copper tubes in the condenser. From this cause frequent repairs are necessary, and vessels are often detained at sea.

Mr. Henry Trotman has patented this marine feed box for the purpose of arresting any impurities that would otherwise pass from the surface condenser direct to the boiler. For example, water used over and over again, as it is with surface condensing engines on long voyages, produces a strong galvanic action on the plates of the boilers, consequently quickly destroying them. The invention states that with these feed boxes in the boilers, the S.S. Roman, of 1207 tons, steamed from the Cape, calling at St. Helena and Ascension, in 29 days 20 hours, with an average of 12 tons of coals per day, with a pair of C. A. Day and Co.'s surface condensing engines of 220 horse power nominal. No other instructions are required for its use than to keep the density of the water in the boiler from 17 to 18 at 120° Fahr., and an examination of the box at the end of each voyage. As its efficacy depends upon the chemical destruction of certain of its parts, the periodical renewal of these parts is necessary to its action. It is claimed for this invention, however, that it is highly economical in obviating the necessity of frequent repairs, and effecting a great saving of fuel.

Specimens of Moore's patent pulley block, and Moore and Head's patent hand hoist, were shown by the makers, Head, Wrightson and Co., of the Teesdale Ironworks. For the latter appliance it is claimed that it is especially constructed to enable one man to raise heavy weights with ease and rapidity. It is so arranged that the man can check it without difficulty when the weight is falling. It is simple in arrangement, strong in construction, and easy to move about. It can be fixed to any beam or bar, and supplied with chain for any length of lift; and

is especially suitable for mills, warehouses, builders' purposes, brewers, farmers, &c. Two sizes are made; the smaller one to raise 5 cwt., and the larger one 10 cwt., when a force equal to 1 cwt. is exerted by the man.

Wrightson's patent hydraulic hoist for blast-furnaces has been exhibited at former meetings, and we need only remark concerning it before that its object is to secure the advantage of an accumulative power, which can be developed as required, and at the same time to avoid the ordinary complications of this class of machinery by making the hoist work direct from the accumulator. This hoist has been introduced with the most successful results in the Cleveland district, and it only requires that its merits should be better known to secure its wider use throughout the country.

The Messrs. Whitley, of Leeds, had one of Allen's patent governors on view. Upwards of 400 of these governors are now in use in the United States. As the principle of the invention is almost new to Scotland, we may briefly explain its construction, as applied to engines, either portable or stationary, and it is worthy of remark that eminent engineers who have investigated its mechanism have declared that it possesses decided advantages over any ball or centrifugal device. Within a corrugated cylinder, which has small projecting ribs on its interior periphery, and which is partially filled with oil, there works on the spindle a paddle-wheel, which paddle-wheel is caused to revolve at (say) 400 revolutions per minute by a belt communicating with the fly-wheel shaft. The tendency of the revolving paddle-wheel is to cause the cylinder to move in the same direction. On the opposite end of the cylinder is a trunnion or short spindle fixed to it, attached to which is a lever carrying a weight, which weight should be placed forward or backward to determine the speed. This weighted lever is raised by the movement of the cylinder. Attached to the trunnion, and moving with it in the opposite direction to the weighted lever, is a short lever, which by means of a connecting rod and short cross lever, opens and closes the throttle valve according to the amount of work thrown upon or removed from the engine.

One of the most interesting "exhibits" was that of a quantity of Asbestos Steam Packing, made at the works of the Patent Asbestos Manufacturing Company (Limited), at Glasgow. The patentee of this new packing is Colonel Fish, an American, who came to this country last year, and brought its merits under the notice of several of the principal railway companies. The chief properties of asbestos are its absolute indestructibility at any degree of heat, wet or dry; its insensibility to the action of the most powerful acids; and from its being unaffected by water or decay it is simply what its Greek name signifies, imperishable. When to these facts are added that of its possessing in the highest degree that so peculiar soapy or greasy feel so characteristic of plumbago, soapstone, and French chalk, its merit for a packing will be recognised at a glance. The patentee of this packing, from a desire to have the matter fairly tested, and to be able to have good references, applied it early last summer to a fast passenger locomotive on the Caledonian Railway, a heavy goods engine on the North British Railway, and one of the Atlantic service steamers of the Anchor Line—these lines being fair representatives of the packing-consuming public. The results of these experiments were reported on at a meeting of the Institution of Engineers and Shipbuilders in Scotland, in December last, on which occasion the President remarked concerning it:—"That a specimen of asbestos packing, which had been used for the piston-rods of the steam-ship *Anglia* had been sent by Mr. H. R. Robson, of Finnieston Steam-Ship Works, together with statement from the chief engineer—Mr. Farland—of the *Anglia*. It had proved highly satisfactory, having been in use while the vessel had steamed 24,000 miles. The rod was in beautiful condition, and the gland was only screwed up a turn at the end of each voyage." He added—"This was a most interesting subject, it was a new application of a mineral possessing peculiar properties. The mineral, from its fibrous nature, had properties belonging to wool and flax, but was not, like them, affected by the action of heat or fire." In proof of the latter assertion we may state that Col. Fish has been making experiments for some time past, with a view to turning asbestos to good account in the manufacture of paper and cloth. He has already got some specimens of cloth quite as fine as ordinary unbleached linen, which may be placed in the hottest fire without being consumed. The colonel is about to erect new works for the manufacture on a large scale of the new packing. He expects, when his new establishment is completed, to be able to turn out from 200 to 300 tons per annum.

Among other mechanical novelties of which models were exhibited mention should be made of Thomas's patent melting or refining furnace; a patent signal lamp for ships, by Mr. W. Harvie, Glasgow; a hydraulic portable rivetting machine, and samples of work, by Mr. R. H. Tweddell, Roker, near Sunderland; Cassel and Morton's patent water bottom refinery, by the Glasgow Iron Company; Gall's patent smoke prevention apparatus; and a model showing the application of Dornoy's patent rotary rable to an ordinary puddling-furnace.

We come next to speak of the mineral "exhibits," and these, as well as the mechanical appliances, were sufficiently numerous to be thoroughly successful. Prevalent in this list was the Hareshaw freestone, exhibited by Mr. G. R. Nixon, Billingham. The specimens included a sample of freestone for blast-furnace hearths, containing chemical ingredients in the following proportions:—Silica, 95.29; alumina, 3.55; protoxide of iron, 0.21; lime, 0.29; magnesia, 0.18; potash, 0.34; soda, 0.11—100.17. There were also many well-selected samples of the minerals of the Lanarkshire district, including slaty sand, calcined lower blackband, lower blackband, Mushet blackband, and other qualities, shown by the Monkland Iron and Steel Company, of which Mr. Ferrie, the patentee of the new self-cooking blast-furnace, is manager; specimens of Scottish carboniferous sandstones, from the Hunterian Museum collection; specimens of cannel or gas coal, from the Hunterian Museum collection; specimens of ironstones, from the Hunterian Museum collection; specimens of Scottish rocks, by Mr. W. J. Millar, C.E., Glasgow; a model of section of the strata in Gilmorehill Quarry, from the Hunterian Museum collection; a plan of general section of Lanarkshire, from the Hunterian Museum collection. The Institute was indebted to Prof. Young for the interesting collection contributed from the Hunterian Museum. In addition to the raw minerals, however, there were shown samples of malleable iron, and samples of pig-iron, by the Glasgow Iron Company; samples of steel goods, by Mr. Charles Attwood, Volonghams, Durham; and samples of wire, by Messrs. Richard Johnston and Nephew, Manchester. One of the latter samples then "hung a tale." It was a coil of No. 4 gauge, 1658 yards long, and weighing 710 lbs. It was rolled on Bedson's continuous rolling mill, and heated by Siemens's patent regenerative gas furnace. It is usual to roll this size of wire in short lengths, and then weld them up for telegraphic purposes; but by Mr. Bedson's machine the wire can be rolled to any length desiderated. The only remaining "exhibits" worthy of attention were models of H.M. troop-ship *Malabar* and other steam-ships, by Messrs. R. Napier and Sons, Glasgow; models of iron floating-docks and other steam-ships, by Messrs. John Elder and Co., Glasgow; and a model of the *Meg Merrilies* and other steam-ships, by Messrs. A. and J. Inglis, Glasgow.

The proceedings of the institute were commenced on Tuesday afternoon. The Corporation Galleries, in which the meetings took place, are a suite of rooms belonging to, and in their name imports, to the Town Council of the city, and were admirably adapted for the purposes of the Institute. Mr. Henry Bessemer was accompanied to the platform by Sir John Alayne, Bart., Butterley Ironworks; Major Jackson, Coats Ironworks, Coatbridge; Messrs. Menelaus, Dowdall Ironworks; Josiah T. Smith, Barrow Steelworks; Edward Williams, Bolekew, Vaughan, and Co.'s Works, Middlesbrough; Robert Cassels, Glasgow Ironworks; Kelson, engineer, Leeds; J. R. Napier, F.R.S., Glasgow; Walter Neilson, Summerlee Ironworks, and James Colquhoun, Llynvi Ironworks.

The President, in opening the proceedings, spoke as follows:—"It is with the greatest pleasure that I find myself face to face with you again, especially under the happy auspices under which we have assembled. In most of our former meetings it was more or less a difficulty with us to accommodate the numerous and increasing members of this institute in a way that its importance renders desirable. In the present case, however, we have no cause to complain upon that point, for it would be impossible to conceive we could have rooms more convenient for our purpose than those which the Lord Provost and his colleagues have placed at our disposal. (Applause.)

The Lord Provost was sure he only expressed the feelings of all who had to do with the management of the public affairs of Glasgow when he saw how happy they were to meet so large and influential, and, in many cases, talented individuals in this city. They were always glad to meet with eminent men when they came to this city, and they were especially glad to meet with those connected with the trade upon which Glasgow so much depended. (Applause.) This city was the centre of the Scotch iron trade, and he was happy to state that with regard to iron shipbuilding the Clyde was the first of any river in the kingdom, having turned out last year 1,600,000 tons. He was sure that whatever could be done by the magistrates to aid the institute in any way they would be happy to do it. They had great pleasure in placing the rooms at the disposal of the institute, and hoped that the meetings would be successful. (Applause.)

The Chairman said: In the various centres of the iron manufacture which it has been our good fortune to visit during the meetings of this institute, we have discovered that each particular locality has become famous for some special branch of that manufacture. The circumstances leading to such a result are various. In

some cases the demands of that particular part of the country especially help to give a feature to the trade; in others the nature of the minerals and the nature of the fuel also tend considerably in that direction. Scotland, I need not tell you, is known all over the world, and wherever civilisation has advanced Scotch pig iron has found its way. A very valuable material it is for ironfounders. Not only is it a useful material exported in a raw state, but the manufacturers of it in this country have arrived at very considerable perfection. The fine castings and hollow work generally are so well known to you that I need not dilate upon the subject. The value of this manufacture is very great, and, I think, is universally known. Scotland has not been behind in any department of the iron manufacture in this country, and we owe to her sons some of the greatest improvements which have been introduced in the iron trade. The discovery by Mushet of the blackband in Scotland gave an impetus to this branch of the trade—that material being so well adapted for fine castings. It is from this circumstance, no doubt, that this particular branch of the trade has been so extensively carried on, though the manufacture has at the same time made much progress. Following upon that discovery, and many others, was one which it is impossible not to notice—I allude to the introduction of the hot blast by Neilson. (Applause.) What Scotland and, indeed, the whole world, have gained by that invention it would be difficult to tell; suffice it to say that the invention is now generally recognised as a necessity in the iron manufactures of this country. I will not detain you by enlarging on this subject, as so many who now listen to me are well acquainted with it in all its bearings. I, therefore, conclude what I have to say in that respect by commencing the proceedings of the day.

Mr. FORBES (the foreign secretary) then stated that foreign countries were represented as follows:—United States—Joseph C. Butler, John C. Peebles, C. H. Morgens, and B. C. Louth; France—M. Michel; Sweden—Herr Brusewitz; Belgium—M. Jordain, M. Taskin, M. Tahon, and M. Deby.

The General Secretary (Mr. Jones) read the report of the council:—"It stated that in accordance with the rules of the Institute, the following retired at the next annual meeting:—Vice-Presidents: Messrs. W. Menelaus, Josiah T. Smith, and Walter Williams.—Members of Council: Mr. W. S. Roden, Mr. C. W. Siemens, Sir J. Whitworth, Mr. E. Williams, and Mr. George Wilson. The council unanimously nominated Mr. I. Lowthian Bell as President for the two years commencing at the next annual meeting. The nomination of Mr. Bell would leave a vacancy in the list of vice-presidents, and the Council recommended that Mr. E. Williams be nominated to fill this vacancy; as also that the following members be elected to fill the vacancies caused by retirement: Vice-Presidents: Messrs. W. Menelaus, Josiah T. Smith, and Walter Williams.—Members of Council: Messrs. W. S. Roden, C. W. Siemens, H. Sharpe, Walter Neilson, and James Hunter. These recommendations were unanimously agreed to. This concluded the formal business of the meeting, with the exception of Mr. Jones reading the report of the scrutineers for the election of new members, which was unanimously approved.

Mr. JAMES GEIKIE, of the Geological Survey of Scotland, read a paper "On the Geological Position and Features of the Coal and Ironstone Strata of the West of Scotland." In it the author gave a description of the carboniferous formation as developed in the western districts of Scotland, his object being to point out the chief features by which the Scottish mineral-bearing strata differ from the equivalent deposits in England. The geologist or mining engineer who had confined his observations to the English coal fields would, he said, be apt on a sudden introduction to the West of Scotland to make some mistake as to the position of the Scottish carboniferous deposits. In the typical districts of England the coal-bearing strata were found to overlie the great mountain limestone, but in Scotland some of the richest coal and ironstone fields occupied a position in the carboniferous limestone series itself, and underneath that horizon there also occurred in some localities mineral-bearing strata of great importance. The Scottish carboniferous series was divided into four series—viz., the coal measures, the millstone grit, the carboniferous limestone, and the calciferous sandstone. These series the author described in succession, and he then went on to remark that the upper group was of much importance. It consisted of immense deposits of white and grey sandstones, which often covered a wide extent of country, and were largely employed for building purposes. Indeed, this group was the chief repository of the building stones of central Scotland. In this group also occurred beds of limestone and seams of coal and bituminous shale, which were now largely employed in the manufacture of oil. The author gave his reasons for concluding that none of these oil shales would be found in this group as developed in Lanarkshire, the whole being in that county occupied by thick masses of volcanic materials. He also gave a brief sketch of the physical conditions under which the upper and lower groups of the calciferous sandstone series had been accumulated. No contemporaneous volcanic rocks occurred in the limestone series of Lanarkshire, although they were so extensively developed in equivalent strata in other localities. They occurred, however, in the limestone districts of Ayrshire.

The author then pointed out what might be inferred regarding the physical condition that prevailed in the Scottish area during the formation of the limestone series. He said that while the English carboniferous tracts were deeply submerged during the limestone period the Scottish area ever and anon was converted into land, the numerous alternations of coal seams with limestone being the most striking evidence on this head. The millstone grit he only briefly touched upon, as it did not differ markedly in its geological features from the strata which occupy the same position in England. He referred to the thick beds of fire-clay in the coalfield, and the occurrence here and there of good clay ironstone. The coal measures also presented phenomena strictly analogous to those met with in English strata. He gave some details about the seams of coal and ironstone that occur in this series in the Lanarkshire coal field, and remarked that there was yet ground for hope that in some of the deep unexplored districts new fields of blackband ironstone might be reached. There was certainly no geological reason why this should not occur. After some reference to the conditions under which the coal measures were accumulated, the author alluded to the intrusive igneous rocks which intersect the coal fields, and which he said ought to be carefully distinguished from the igneous rocks which are laid down contemporaneously with the carboniferous deposits. The faults or dislocations of the coal fields were then referred to. Mr. Geikie concluded his rapid review of the more characteristic features assumed by the Scottish carboniferous strata by again pointing out the chief points of divergence between the Scottish and English carboniferous systems, and stating that the history of the calciferous sandstones and the carboniferous limestone series formed one of the most instructive chapters of Scottish geology, and the unravelling of their details gave a key to the whole structure of the Scottish coal fields.

After a few remarks by Mr. WOODHOUSE, Mr. JOHN YOUNG, and Mr. WHITLEY, a vote of thanks was passed to Mr. Geikie for his paper.

[To be continued in next week's Mining Journal.]

THE MINING DISTRICT OF SOUTH-WEST LANCASHIRE.

In recording the Proceedings of the Institution of Mechanical Engineers, in the Supplement to last week's Journal, we gave a description of Messrs. Blundell's New Pits, Wigan—from that description of the works it will be gathered that they are of the most modern and complete character, and perhaps stand foremost in the kingdom. Whilst every attention has been paid to the practical requirements of a colliery, architectural beauty has not been lost sight of, and the works are altogether excellently arranged.

After the company had taken a good view of the works (the Guibal fan attracting much notice), and some gentlemen had descended the pit, they proceeded into the engine-room, where, besides the massive engines, a capital luncheon, prepared by Mr. Watkin, demanded attention. The tables were beautifully decorated with flowers and ferns, kindly lent for the occasion by Messrs. M. Banks and W. Brown. On the tables were specimen heaps of the coal obtained from the various seams worked by Messrs. Blundell, including the Pemberton Four-feet, Wigan Four-feet, Wigan Nine-feet, King Coal, Orrell Five-feet, and the Orrell Four-feet. Around the walls were some excellent photographs of the whole of the works, executed by Mr. Curtis, from the office of Mr. Burrows, the engineer. The various plans used in the construction were also laid upon the table. At one end of the room were the pleasing words:—"Welcome to the Mechanical Engineers, whose labours have so largely contributed to England's greatness. Labor omnia vincit." Luncheon having been disposed of,

the visitors returned to the train, and in a few minutes found themselves in the vicinity of—

MESSRS. RYLANDS MILL,

Through which they made their way, and observed the numerous processes of making cotton goods, which were of a very interesting character. The engines also were closely inspected. From these mills the train and its freight wended its way to the

WIGAN COAL AND IRON COMPANY'S WORKS.

Amongst the various interesting objects here to be seen was the large chimney which has just been erected. It is 112½ yards high, and its interior diameter is 13 ft. 7 in. all through. The furnaces, boilers, and extraordinary engines afforded immense pleasure to the visitors, who took the greatest interest in the various appliances.

Here was an alternative visit, those who chose having an opportunity of viewing—

PLATT LANE COLLIERY.

A number of gentlemen interested in coal-getting by machinery made their way thither, and descended the pit, to see at work the machine invented by Mr. R. Winstanley, of Ince. On this machine a paper was read at the Congress on Thursday, and from that we gather that it has been worked daily or nightly for the last two years at the Platt Lane Colliery of the Wigan and Whiston Coal Company, in a seam of coal known by the name of the Pemberton Little Coal. The coal is about 2 ft. 4 in. in thickness, and is notoriously hard—so much so, that it was with the utmost difficulty men were obtained to work it; and at one time the seam stood idle for some time because colliers could not be got to work it, whilst the proprietors had always to pay a higher rate for getting it than any other seam of coal they worked. The cutter, which is the invention of Mr. Winstanley and Mr. Barker is, like most others, driven by compressed air, which is conveyed down the shaft and along the main roads in iron pipes, and from the end of the drawing road to the machine in india rubber hose pipes, 2 in. in diameter. The coal is cut by a spur-wheel, fitted with teeth, this wheel being 3 ft. 6 in. in diameter. The wheel cuts its way into the coal without any previous "holing," and the depth of the "holing" made by the wheel can be varied at will. The machine is drawn along the face of the coal as it "holes," or cuts its way, throwing out the small coal or slack between the tram-rails upon which the machine runs. The chief advantages of the machine are the following:—1. What may be called the "swivel movement," by which means the cutter "holes" its own way into the coal, cutting, in fact, from nothing up to 3 feet, and for bringing the cutter back underneath the framework of the machine when not at work, and in this position the machine can be taken through any narrow roads or portions of the mine, without the necessity of removing the wheel from the machine. Another advantage is that of applying the power to drive the cutting-wheel directly on the periphery of the wheel; whilst this mode of gearing also allows the small pieces of coal or slack to fall through to the bottom, so as not to lock or clog the teeth of the machine. The average rate of holing by the machine is from 25 to 30 yards per hour, according to the material the machine is holing in; but this, it was stated, was, after all, a matter of no great importance, as the great points to be considered were the amount of work the machine would do and how it would do it. The machine in question had frequently cut the whole length of the face of 120 yards in a night, or between 7 P.M. and 4 A.M. This, however, included all stoppages, such as meal times, changing cutters, &c. In the same mine 5 yards per day is much above the average work for one man with the pick; and under ordinary circumstances it is considered the work done by the machine would be equal to that of 40 men. The machine works in the night time, the coal being removed by ordinary manual labour in the day. No powder is used, the coal falling by its own weight after it is holed by the machine. For over six months the machine had had little or no repairs, and the practical advantages found in its working are—first, that without the cutter they could not get men to hole this particular coal on account of its hardness; second, that when the seam was worked by manual labour the proportion of coal and slack was three of coal to one of slack, and with the machine it is eight of coal to one of slack; third, the work is done independently of the men, who could not be got to work regularly, and consequently the production is more certain with the machine. The actual cost of getting the coal by the machine and by hand labour has been found, from the payments made during a period of six weeks at the Platt Lane Colliery, to be as follows:—Hand-labour, 3s. 6d. per ton; machine-labour, 3s. 1½d.; showing a saving of 5d. per ton by the machine. The profit, however, was considered to be absorbed by the expense of compressing the air for the machine, and by interest on outlay, and wear and tear. The increased value of the produce, in consequence of less slack being made by the machine than by hand-labour, was estimated as follows:—By hand-labour, 3 tons of coal at 11s. per ton, and 1 ton of slack at 7s. 3d. per ton, 40s. 3d., or an average value of 10s. 6½d. per ton by the machine; 8 tons of coal at 11s. per ton, and 1 ton of slack at 7s. 3d., 95s. 3d., or an average value of 10s. 7d. per ton, being an increase of 6½d. per ton in the value of the coal when worked by the machine. In a seam of coal a few inches thicker than that of the Platt Lane Colliery, and under more favourable circumstances, it was considered there would be a saving over manual labour of from 25 to 30 per cent. The cost of getting the coal by the machine, given at 3s. 1½d. per ton, could not, however, be taken as a correct representation of the cost, the one at the Platt Lane Colliery being the first that was put to work, and as a commencement, a liberal rate of pay was given to the man attending it, as an inducement to give it a fair trial. The same man has now been working the machine on contract for the last 14 or 15 months, and earns more than three times as much per day with the machine as he previously did with the pick.

The next place was the—

ROSEBRIDGE COLLIERY.

Here is the deepest coal pit in working in the world. It is upwards of 800 yards deep, and the period occupied in descending is considerably less than a minute. Many of the visitors went down this pit, and every requirement in the way of coats and caps, and lamps was provided by Mr. Bryham for those who wished to do so. At this colliery could be seen a "disengaging hook," a capital invention by Mr. J. Bryham to prevent over-winding. Refreshments in plenty were provided by the firm, and before leaving, Mr. Brammell, on behalf of the Association, thanked Mr. Morris, and his manager, Mr. W. Bryham, for the kind manner in which they had received them, a sentiment which was received with acclamation. From Rosebridge the visitors went to the Ince Hall Middle Patricroft pits, and

INCE HALL ROLLING-MILLS.

Twelve months since these mills were commenced, and, although not complete, they are in working, and put out in a finished condition 200 tons of iron per week.

This was the last place visited, and the members of the Association came on by train to Wigan, where they were entertained by the Wigan Coal and Iron Company to a most sumptuous luncheon in the Public Hall. The chair was taken by Mr. Alfred Hewlett, secretary to the company, and there were a number of other gentlemen invited to meet them. After justice had been done to the repast,

Mr. HEWLETT rose, and said time was inexorable. As their train left Wigan in a very short time, they would omit the loyal toasts on that occasion, but as the loyalty of the Engineers was well known, he thought that explanation would be satisfactory. (Hear, hear.) Before they departed, however, he wished to propose "Success to the Institution of Mechanical Engineers," the members of which were present as guests that evening. They were delighted to welcome them to Wigan, and pleased to see amongst them a body of men to whom the welfare and success of the country was attributable in no small degree. (Applause.) He proposed "The Institution of Mechanical Engineers." (Cheers.)

Mr. SAMPSON LLOYD, who requested that all the members of the Institution should rise to their feet, acknowledged the toast. He said they could not have expected such a kind reception as they had received at all hands on that occasion, and if he were to express what he felt towards those gentlemen who had thus kindly treated them, by throwing open their works and otherwise looking after their comfort, he should detain them a considerable time. As time, however, was limited, he would request them to drink "Success to the Wigan Coal and Iron Company," to whom they were indebted for the capi-

tal spread they had just sat down to, and coupled with it the name of Mr. Hewlett. (The toast was drunk amid cheers, Mr. Lloyd expressing a hope that iron might never be worth less money, which was received with laughter and applause.)

Mr. HEWLETT said with the last sentiment he cordially agreed, and he hoped it never would be less. He felt quite overwhelmed at the manner in which they had received the toast of the Wigan Coal and Iron Company and its humble representative. He was sure that all those gentlemen who had thrown open their works that day had felt it an honour to have the company of such a distinguished party. They had felt that they had learned something from the visitors, and not that the visitors had gained anything from them. Speaking for the Wigan Coal and Iron Company, he said it afforded them the greatest gratification to receive the Engineers, every one of whom he hoped had been pleased with what he had seen in the neighbourhood of Wigan. (Cheers.)

THE BEST MINING MACHINERY AND TOOLS.

PREMIUM OF TWENTY POUNDS.

SIR,—I have just returned from a short tour, and find numerous letters which have been addressed to me in the interval. I am obliged to Mr. J. H. Collins, F.G.S., for the interest he has shown in the matter of my proposition—to pay a Premium of Twenty Pounds for the best essay on the most approved description of Machinery and Tools used in Mining, and am glad that he has acted in so satisfactory a manner. The circular prepared by Mr. Collins so well expresses my views that I cannot do better than reproduce it:—

MINERS' ASSOCIATION OF CORNWALL AND DEVON.

PRESIDENT: G. L. BASSETT, ESQ.

The Lecturer has been requested to call the attention of the more advanced Students in the classes of this association to an offer which has just appeared in the *Mining Journal* from a correspondent known to the Editor.

This gentleman wishes to obtain certain information in the form of an essay or written paper, and he offers a prize of 20l. for "The best Account of the Principal Machines and Tools used in Mining Operations, the Names of their Manufacturers, and Prices; together with the results of the writer's experience in their use."

The papers to be printed in the *Mining Journal*, and the award to rest with the Editor, or some one appointed by him.—*Falmouth.* J. H. COLLINS, F.G.S.

I shall be quite content to leave the entire arrangements in the hands of Mr. Collins, and his friend Capt. Josiah Thomas, of Dolcoath, and feel assured that in awarding the prize the most worthy (whether a student of the Miners' Association or other person) will obtain it.

A FORMER CORRESPONDENT.

BLASTING OF IRON.

SIR,—Your correspondent, "L. D." (Dublin), says that he wants to break some blocks of wrought, and cast-iron, from 1 ft. to 2 ft. thick for convenience of removal, that he can get holes drilled, and wishes to know how then is best to proceed, whether with gunpowder, or glycerine, and how much of the latter, and how to use it, and asks for information from any experienced correspondent. If he refers to the report of the experiments of the Government Gun-cotton Committee with dynamite at Llanberis, which appeared in the *Mining Journal* of June 29 last, he will find the information he desires. The first experiment made was thus described:—"A piece of exceedingly tough wrought-iron, cut off the end of the shaft of a steam-engine, 15½ in. diameter, and 9 in. in thickness, had a hole drilled through it 1½ in. diameter, which was filled with dynamite, and exploded by a percussion cap at the end of a Bickford fuse. The quantity used was about 1 lb., and the two ends of the bore hole were left open without any tamping being used. On the explosion taking place the mass of iron was blown into two pieces, with a clear rent full 15½ in. in length; one of the pieces was blown 10 yards distant, where it struck against the side of the quarry, and the other half was blown a distance of 12 yards on to a bank 12 ft. high."

I was present and saw this experiment, and the only alteration I could suggest in the above description is that the quantity of dynamite described as about 1 lb., was, in fact, ¾ lb. only. I may add that the piece of iron weighed 4½ cwt., and that I understand Mr. Bidder, C.E., one of the committee, calculated the breaking strain to be about 350 tons to the square inch.

For blasting iron and exceedingly hard rock dynamite stands unrivalled—gunpowder is not strong enough, and comparatively useless for such purposes, and nitro-glycerine is difficult to procure, and without great care dangerous to transport and use.

Professor Abel, F.R.S., in his lecture on explosives, delivered on May 14 last, at the Institution of Civil Engineers, and which has since been published, described dynamite as "one of the safest, most powerful, and most convenient explosive agents applicable to industrial purposes," and most unquestionably it is so. I have myself broken up with dynamite three salamanders at the bottom of blast-furnaces, each of which contained about 150 tons of exceedingly tough iron, without any accident whatever, and, indeed, without incurring difficulty or danger. The only extra caution to be observed in blasting iron is where it becomes necessary to re-charge a hole in consequence of the first blast having failed to do the work required.

In such case, a hole should be allowed to get cool before re-charging, for the extreme heat generated from the first blast would render the dynamite, if immediately exposed to it, too sensitive to enable it to be effectually tamped down without danger of an explosion. When the iron is cool it may be tamped down with the greatest force, and with perfect safety.—*Belmont, Bangor, Aug. 5.* O. WEBB.

BREAKING-UP IRON—DYNAMITE.

SIR,—Having introduced Dynamite to a great number of parties for breaking up old wrought and cast iron, I should feel obliged if you would refer "L. D." (Dublin) to me, and I will render him every assistance. With the aid of dynamite I can break pieces of castings varying from 3 in. to 12 in. thick, without the expense of drilling, and should there be any thicker than that, I shall only require holes to be bored about 5 in. or 6 in. deep. *Holywell, Aug. 6.* MANAGER.

RAILWAYS OR NO RAILWAYS.

SIR,—In writing upon the subject of very narrow gauge railways—that is, 3 ft. or 3 ft. 6 in.—the very absurd view is taken that such lines are particularly applicable to sparsely populated districts; but a moment's consideration will suffice to show that this position would only be tenable in old countries, and in the neighbourhood of large towns where the value of land is high—in the colonies and in America the 3 ft. gauge has really nothing to recommend it. In those countries the concessionaires of the lines (I use the term as being best understood by capitalists in England) usually receive the necessary land as a gift from the State, so that the capitalist's outlay is limited to making and laying the line, and there is really no difficulty in proving that to provide for a given quantity of traffic—or perhaps it would be more correct to say for a given maximum load in a single train—the 4 ft. 8½ in. gauge can be quite as cheaply constructed as the 3 ft. gauge. The apparent economy claimed for the 3 ft. gauge is shown by making comparisons with expensively constructed lines formed under totally different circumstances. It is the practice in laying out a line to provide for probable future traffic, and I have yet to learn that, unless in exceptional cases, this is not the wisest course. It should be remembered that it is unnecessary even to go out of England to find a 4 ft. 8½ in. line constructed at less than 1600l. per mile, and this would compare favourably with the cheap narrow-gauge line about which so much fuss has been made. I am now speaking of first cost only, for the line once laid the immense superiority of the 4 ft. 8½ in. gauge cannot be questioned. It seems to have been erroneously assumed that a 3 ft. line can be made less substantially, and therefore more cheaply, than a 4 ft. 8½ in. line, but this is not the case. It is quite easy to make a truck to carry a given load—say, 6 tons, on a 4 ft. 8½ in. line—as light as for a 3 ft. line, and also as strong, so that there would be no necessity from this cause to construct the standard gauge heavier than the narrow. The sole difference, then, would be in the length of the sleepers, and as the thickness might be the same, the cost of them need not be above two-thirds more. The notion of calculating sleepers for the narrow-gauge at 10d. each, and for the standard gauge at 2s. 6d. each, is absurd if it is inferred that the same number of sleepers are used. The dif-

ference would rather be as between 10d. and 1s. 6d., and from advantages which the standard gauge gives, I should regard the 1s. 6d. as the more economic outlay. It is quite true that everything depends upon working up to the full capacity of the line, and no more; it is this that permits such economy to be shown in the working of one line as compared with another, and in the comparison of one class of traffic with another. In passenger traffic, for example, a full train load is seldom obtained, except in the case of excursion trains, but in mineral and goods traffic we can readily suit the load to the capacity of the engine; hence the fact that mineral traffic yields the most profit.

But there is an advantage in the standard gauge which should ensure its adoption everywhere, and no matter whether that standard gauge be 4 ft. 8½ in., 5 ft., or other, provided it be the standard gauge of the country—it permits of the transport of merchandise without transshipment. It is quite easy to construct light 4 ft. 8½ in. lines as feeders to the trunk lines of that gauge, and it was long ago proposed to work these feeders by horse traction, because it always happens that the engine represents the greatest load which the line has to bear, and because the weight of the engine has necessitated a stronger line; but I can see nothing to prevent the general use of Fairlie's engines, no heavier than those which he now proposes for his 3 ft. lines on the standard lines, or at least on 4 ft. 8½ in. feeder lines. In America he would have an enormous field for enterprise if he turned his attention in this direction, for there are millions of produce now wasted which could thus be secured a good market. It might not pay to carry produce 100 or 200 miles on a narrow line, and then transship to a line of standard gauge; but if Mr. Fairlie could with his improved engines haul the trucks over the eight-feeder lines, so that they could be at once taken on to their destination by the trunk line companies, all difficulties would be removed. I feel confident that in his engine Mr. Fairlie has really a good idea, that could be made to yield him a fortune; but by making it inseparable from the narrow gauge he is making the same mistake as was made by G. F. Train in trying to introduce tramways in England by relying upon a general concession instead of obtaining authorisation for individual lines. *London, Aug. 6.* AMERICUS.

PREVENTING BOILER INCRUSTATION—AERATED STEAM.

SIR,—As to the success of the Warsaw engine there can, I think, be no doubt; for if an engine can run 11,000 train-miles without the tubes becoming soiled, and by discontinuing the use of the apparatus some 2000 miles sufficed to produce all the former evils, further evidence cannot be reasonably asked for; yet we may be permitted to enquire whence the advantage results, and whether similar advantages cannot be obtained even still more economically. The cause of the success which has attended the working of the Warsaw engine can, I think, be summed up in a single word—circulation; but I cannot suppose that forcing air into the bottom of the water space is the best method of obtaining this. The wear and tear of the air-pump, and the expense of keeping it in order, must be an important objection to the system, and may prove a considerable set off to the 15 per cent. of alleged economy in the consumption of fuel; but the experiment upon the Lancashire and Yorkshire engine has proved that it is possible, by securing good circulation, to entirely prevent incrustation, and this is of the utmost consequence.

For my own part, I believe that the aeration of the water, except for securing circulation, is absolutely worthless, and this view will probably be confirmed by many other practical readers of the *Journal*; and if it be circulation that is required, the cheapest and best method of securing it is to make the boiler itself rotate, this is not a new idea, but one which was never fully developed, the inventor, Dr. F. Grimaldi, who was an exhibitor in 1862, never having obtained the necessary funds for carrying out the invention. By the use of the rotating boiler, tubes are rendered unnecessary in any but the largest boilers, and a maximum of steam is generated with a minimum consumption of fuel.—*Aug. 6.* ENGINEER.

THE WHITEHAVEN IRON MINES—No. I.

SIR,—What wonderful stimuli the high prices of metals have imparted to mining industry! And this not in one particular district, province, or kingdom, but in all mining districts at home and abroad. There were times when copper only was in the ascendant; that gave way to tin; then tin and copper were both in great request—sometimes lead was in special favour. Now all these are in great demand. But of all these metals tin is most sought after; but iron is now more in demand than any other metal whatever.

The best iron mines that I know are those in West Cumberland—best as to quality and quantity of the metal, and, consequently, best as to the profit derived from the workings. A few years ago Cleator Moor was a morass; no one knew that feruginous wealth lay embedded beneath; but one mine was opened, then another, and others, on masses of red hematite ore, which yield immense profits to the proprietors, and give employment to an imported population of Irishmen and others. What was a morass is now an hive of industry, a population of several thousands having located themselves on that spot and its neighbourhood. For their ostensible spiritual advantage Protestant and Roman Catholic churches have been erected, and lately opened (both in the same week) by their respective bishops; but spiritual religion amongst the Irish is a scarce article, their religion, as a rule, consisting of a name merely. What has been done at Cleator Moor will, I doubt not, be done in other places where similar wealth exists, when that wealth comes to be acknowledged.

Esk, in West Cumberland, is the name of a river rising about 10 or 12 miles east of Ravenglass, and flowing into the sea near that little village and railway station. In the mountains skirting the valley called Eskdale there outcrop several iron lodes of considerable width, and of good quality. For many miles in all directions the country is under grant to sundry lessees for mining on these lodes. In Cumberland the *extents* of the mineral grants are very different from those in Cornwall. In Cornwall it is a rare case to find a sett of one mile in length, but in Cumberland there are sets of several miles in length. Eskdale, which is one of the mines belonging to the Whitehaven Mining Company, is nearly two miles square, and is, therefore, of an area of more than 2000 acres—one square mile being 640 acres. The lodes already "cut" are four or five in number, on the course of which, in the sett, there is a length of nearly two miles. The mountains are about 900 ft. above sea level, or about 600 ft. above the river Esk, in some places more, some less, thus giving "backs" of those heights, so that the company can work on the lodes without any water charge—i.e., the cost of pumping incident to table land mining for 600 perpendicular feet. This is an important feature in this company's property.

The mining is by drifts (levels) in the hills, and, by tramways laid down therein, the ore and debris, if any, are rolled out to an inclined plane on the slope of the hill, where the ore is let down by what is called a balance-tram, or self-acting machine as it is sometimes called, and carted thence to Drigg Station, nine miles distant. One of this kind of machines is in operation on Nab-Gill lode, and one is to be erected for Ben-Garth lode shortly. These are the two most prominent lodes at present known in Eskdale Mine. The former is the most eastern and the latter the most western of them.

NAB-GILL LODGE.—It has been inferred by some persons that the gully in the hill on this lode was formed in very remote times by surface excavations on iron ore, whence a great mass is supposed to have been removed to the opposite side of the valley, and reduced to a metallic state by wood fuel, as then appear, the agent says, evidences of such an operation. The present company are operating on this lode at three points, in lodes numbered respectively 1, 2, and 3. No. 1, or upper level, has been extended from its "mouth" 48 fms.; No. 2, or middle level, 56 fms.; and No. 3, or lower level, 77 fms., all of them passing through red hematite ore of a produce of about 65 per cent. These levels are about 20 fms. apart, nearly perpendicular over one another. Another level, further down the hill, is marked out to be driven, and the hill admits of one still further down than that by the side of the little tributary of the River Esk, called Willen river. Supposing that all these points were pushed forward by a competent number of men, and connections in several places between the levels formed by winzes, the amount of ore raised would be augmented to hundreds of tons per day. The Nab-Gill lode has been "backed" about ½ mile northward from the drifts referred to, and found to be of unvarying quality, but the width varying from 4 to about 30 ft., thus indicating an inexhaustible store beneath. The direction of the lode is nearly north, magnetically. There is a branch westward of Nab-Gill lode, and dipping towards it, of the same quality.

BEN-GARTH LODGE.—A quarry on the summit of the mountain leases exposed to present view a portion of this extraordinary deposit. This portion is about 20 ft. wide. The entire lode here must be about 40 ft. or more in width,

and the ore in an inexpressible quantity is waiting appliances for its removal. The direction of this lode is northerly, like that of Nab-Gill. Its general width I do not know; its length in the sett, as before stated, is not much short of two miles. Before Nab-Gill and Ben-Garth lodes there are two others of recent discovery, pre-eminently similar characteristics. On or near the northern side of the sett by the River Mite there is a lode called Miterdale lode, on which a drift 35 fms. in length has been made, and therefrom iron ore analogous to that from the other lodes has been brought out; but until better means of transit are provided it will be unwise to prosecute the works here very much further. Some are of opinion that this lode is identical with Nab-Gill. I do not think so; it appears to be too far west for that. I think that we must regard this either as the fifth lode, or as identical with one of the lodes recently cut west of Nab-Gill.

TRANSIT OF THE ORES.—At present the ores raised at Nab-Gill are carted to Drigg railway station at an expense of, I believe, 8s. per ton. That is a serious change on iron ore. It has, I find, been in contemplation to construct a narrow-gauge railway near that station, thus obviating all cartage. Such a tramway, or to be constructed cheaply, and might be utilised by Mr. Thos. Harvey's way could be the opposite side of the valley. Would it not be well for the several companies to coalesce for the construction of such a line? It would not, I think, be well to have two lines of railway in the same valley. The railway once open, the expense of the transit would be very small, a few pence only per ton. Then I apprehend the companies would realise handsome dividends; so the sooner they construct the line the better it will be for all the companies concerned in the mines in the Esk Valley. The Whitehaven Iron Company have taken a wise measure by constructing the line for the miners. They must have houses, or be content to be deficient in dwellings for the miners. There being few houses in the neighbourhood where men can be lodged, and the lodgings and board obtainable are very unsatisfactory to the men who come up from Cornwall. I have advised Cornish miners to better their condition by going up to the Eskdale Mine, where they can get 6d. per month on a fair amount of labour, for which they now only get 4d. The distance, or expense of removal, is a great obstacle to their acting on my advice.

The other mines belonging to the Whitehaven Iron Company (Limited), is called Floutern Tarn, near the Ennerdale Lake. Of this mine I propose to speak in my next letter.

R. SYMONS.

Truro, Aug. 7.

N. ENNOR ON STAMPING TIN.

Sir,—I have first to show what I save on my stamps, or rather what is not required. I save the great expensive house to carry the main beam, as I do without them, the main beam and large sweep and also the long fly-wheel shaft in front of the house, with all the blocks, bearings, and brasses for the foregoing articles; then I dispense with the great massive axle and its bearings and brasses, and a deal of engine power; then I add my light axle and flanges, and short sweep and crank (not one-third of the weight); then 100 feet of my axle carries 20 heads, or 40 if required, and my heavy models prove it is with very little friction; then I lift the heads on a 10-ft. axle, having a double row of heads, the fore heads break the rough stones to (say) the size of French nuts; the second heads take it and bruise it to "grate" size; the second heads work rather below the first, and make the flash on my half-saddle grate, the cover is kept in active motion, and every particle of tin thrown on my grate stamped small enough goes through, and gets clear of the stamps. In the old stamps it is often thrown back on the stamps until it is reduced to a fine slime, when the best tin is too low to catch but in slime, and a deal of that goes down the stream to feed the bargain men below, and then a portion is known to go to sea. The specific gravity of tin is sure to keep it in the cover until a deal of it is reduced to slime; it must be liberated quicker, let the size it is required to be reduced to be what it may. I may remark that I should advise all stamp grates to be a size too large, so as to let the tin get out of the cover as early as possible, and then pass it through my round grates of the size required, the large to be returned to the stamps, it will be only hitch tin found in what passes out of the round grate, and my jiggling machine would even catch all of it as ragging in the sieve. I am inclined to think I shall pass a deal more through the stamps in 24 hours than is passed now, but I shall take it all very steady, and will look through and weigh every part of the subject.

I called upon a man a short time since who informed me he had spent 1000l. in patenting tin stamps, and has got none at work yet. I find no fault with him, he is endeavouring to move a head a step in the right direction. I think he is not an Ancient Briton; had he taken time by the forelock, and never attempted to erect a stamp until he had made working models, he would have saved 800l. of his money. Besides, he was in his foundry, and might have tried steam to work his models practically before he came out. I have not that chance, but have to get up rough ones and work my own openly; I have made models and taken them into the courts of law before the judges; I have done so at Bodmin, and at the city of Wells, and in half the law courts about Chancery-lane. I carried models of my round biddles into the law courts of London, with the stuff and water, all of which I worked upon the table, and showed the improvement between the old mode of dressing 70 years ago and 20 years ago; I had old men from 70 to 90 years of age to wash on the table in the old style, and boys for my new biddles; I kept a continual stream of water flowing for over an hour, and did not spill a drop. England has not a record of any man that ever practically worked a model in a court of law, with water machinery washing out the ore. Sir John Coleridge, now Attorney-General, was my leader, and Sir John Karslake was my leading opponent. I only just name these things to convince the public that I am not a novice; still I am inclined to think that in 15 cases out of 20 lighter heads should be used in preference to the drudge Cornish heads, and I think more work would be done. The compressed air and the spring stamps are steps in the right direction with light heads, we must not expect them in these early days to be the height of perfection. I showed you in my last the difference between John Yelland's mowing machine of 30 years ago and the one of the present day. I still stick to my old adage, that nothing in Nature can be at a standstill, not even the adamant rocks, or the ores found in them. I shall carry my stamping ideas further next week, as I would wish to harrow up the minds of the old Ancient Britons, and to turn them from the ways of their fathers before them. Surely they must ere this have discovered that we live in a new age of the world from what their forefathers did; then let them be up and doing, and lend a helping hand, and discard the vicious actions of a Kilkenny cat, that hides from the day, and prowls about at night for mischief.

In conclusion, I may remark upon my models that I employed the best surveyor this land could produce to get up maps, but every judge threw the maps aside and took my models as their guide, rough as they were; the last lot I took to London was in the court over 20 days, and I came off victorious through all.

A hint to the blind. I was at Delabole Quarry on Saturday last; this quarry, I may say, is a pet child of my own rearing. I certainly feel an interest in it; it paid well when I managed it; I left it in a splendid course of working, but new engineers came in, men that could never look 20 years a-head; they re-modelled all the machinery, they pulled up the rubbish from one side and threw it again 400 ft. deep on the other side; they put up, I think, four new Cornish combined engines, all of which, as I told them, they have had to throw out one cylinder, and are now working the short one; they are consuming such a quantity of coals that it is ruinous to the company, but, notwithstanding all this, they are a-head of the Ancient Britons, for they bore a 6-in. hole 50 ft. deep in a week; the foreman told me they bored 27 ft. in one night; the bottom of the quarry rock is harder than the ordinary slate in Cornish mines. I may say I have ever joined hands with Mr. Fox, and advocated boring, but Cornish engineers stand aghast at it, but I see no reason why hundreds of Cornish tin lodes should not be cut by boring at from 10 to 20 fms. deep to see what tin they contain before they put up expensive engines. I know the price of tin is high, but I cannot help hinting that you should feel your way before putting up engines, as I do not believe in half the tin reported on. Then why risk engines when a good hole can be bored as a proof at the rate of 12l. or 14l. for the first 10 fms., and about three times that sum for the second? But 10 fms. are sufficient to show whether the lode contains good tin; if poor, try further on. Some lodes I know ought to have 50 holes bored in them; the first 10 feet might be sunk by a man in two days as a small shaft, then bore to meet the lode at 10 or 12 fathoms deeper, and if the lode contains tin, its contents are to be found near enough. I have said Cornish engineers have long since got up machinery, and bored down right round shafts; as it is they have retrograded, and are reduced to the lowest ebb. I know of but two engines that they can erect, that is the old pumping engine and the

drudge stamps, and for the last 20 years I am not aware they ever made the least improvement on them.

N. ENNOR.

THE SCIENCE OF INVESTMENTS.

Sir,—“Ways and means,” “What investments now pay,” or what shall we “buy,” or what shall we “sell,” are questions asked of us every day. Again, shall we buy “this” or “that,” or sell “that” or “that,” for a “rise” or “fall” in the market. We rarely hear anyone enquire for *bona fide* investments to hold over a series of years, relying upon prospective dividends and the development of pioneer points of operation, which require in cases years to achieve, in our home mines—copper and tin—Cornwall. Yet those who have gained most by mining have stood their ground firmly against adverse reports, as they have been encouraged at times by incipient signs of approaching success. This has been especially exemplified in the South Caradon, Herodsfoot, Basset, North and West Basset, Treavean, Carn Brea, Cook's Kitchen, Dolcoath, St. Ives Consols, Levant, Botallack, Godolphin, Great Vor, and Great Alfred. How many families and towns have there sprung into eminence and opulence, and, as regards the latter, into existence, through the energy of character of certain individuals, and their embarking in mining as an investment, instead as a vehicle of acquiring premiums from fortnightly settlements on the Stock Exchange. The Clymos and Kittos stuck to South Caradon; the Bassets (of Tehidy) to Dolcoath, Cook's Kitchen, and the Croftys, in their earliest and throughout their palmiest days; Lyle stuck to Carn Brea, West and North Basset; the Harveys, Carns, Batters, Dobus, and Vivians to Great Alfred, Great Vor, and Levant; and the Lemon family to the Godolphin; while the prosperous towns of Liskeard, Redruth, Camborne, and the vast foundries and manufactories at Copper House and Hayle, all spring from the strength of character displayed in earnest and practical mining investment, and the mass of wealth derived from the actual profits acquired in working the mines. At the present day the mining share market is just regulated by “supply and demand” of shares on the days of settlement—a kind of horse-racing species of gambling, not exactly 5, 10, or 20 to 1 that this, that, or the other horse will win or lose, but 5, 10, or 20 to 1 that this, that, and the other dealer or dealers can or cannot deliver or take up the shares contracted to be sold or purchased for settlement on the account-day. The value of the particular mine has nothing to do with the price of shares; the “bulls and bears” regulate quotations in accordance with the supply of shares, and the amount of ready money in the hands of operators. This is simply speculation in shares, and is wholly distinct from mining. There are abundance of schemes to occupy the attention of the former; this type of the public do not hold their shares long enough to be called miners. On the contrary, there are many valuable properties in Cornwall for the *bona fide* investor to choose from that pay large and regular dividends, as well as others far advanced in development, exhibiting every probable chance of success and a long prospective career of profits, that can be purchased at one-half, a third, a fourth, and in cases at one-tenth of those ephemeral “schemes” so loudly advocated and broadly proclaimed to the world as market favourites. The investing public should consult a practical engineer or mining authority before parting with his money. It is of no use consulting brokers, who alone are acquainted with market prices, and usually care nothing and know nothing of the actual merits and worth of the mines in which they deal.

What shall we invest in? The French Loan has revealed boards of wealth exceeding in magnitude our wildest conceptions. The new Turkish Loan is, like the French, one of success. English and Indian Government stocks yield 3, 3½, up to 3¾ per cent. The Bank of England, Metropolitan Board of Works, City of London Bonds, 3½ and 3¾; English railway debenture stocks yield 4 to 4½, and in the case of the Metropolitan District 4¾ per cent.; Indian railway guaranteed stocks yield 4½ to 4¾; and most of our Colonial Loans 4½ to 5 per cent. on ruling prices. Next we approach foreign loans, which present a chance of diversified selection for every description of investor. Russian and the higher class stocks yield 5 up to 5¾ per cent.; Argentine, Buenos Ayres, and that stamp of stock give 7 per cent.; Turkish stock, 8½ to 9½; others more, and some none at all. In rotation, next come our home railways, which pay about 4½ per cent. on ruling quotations. Foreign railways pay 5 to 6, and up to 7 per cent., and prove good and secure companies. Again, we have gas, water, and dock companies, returning from 5 to 6 per cent. interest. Joint-stock bank shares pay 6 to 7 per cent. The following ten metropolitan banks, the Metropolitan itself being excluded, paid 6-25 per cent. on the market price on June 31:—

Banks.	Per cent.	Price.
London and Westminster	5-80	£44½ prem.
London Joint Stock	7-73	30
London and County	6-50	30
Union of London	6-50	30½
City	6-55	4½
Imperial	5-93	9½
London and South-Western	6-45	4½ dis.
Consolidated	5-17	2 prem.
Central	7-69	1½
Alliance	4-23	3
Metropolitan	Nil.	4½ dis.

The London and County propose to issue 10,000 additional 50l. shares at 10l. premium, thus increasing the capital from 2,500,000l. up to 3,000,000l., the paid-up capital from 1,000,000l. to 1,200,000l., and the reserve fund from 600,000l. to 600,000l.; Union of London, 10,000 shares at 15l. premium, increasing the capital to 4,500,000l., amount called up to 1,350,000l., and the reserve fund from 300,000l. to 450,000l.; and the City Bank, 10,000 shares at 2l. prem., adding 20,000l. to the reserve fund of 120,000l., and 20 per cent. to their subscribed and paid-up capital, respectively of 1,000,000l. and of 500,000l. This bank appears to have 3,114,957l. deposits, and current accounts and acceptances outstanding of 3,017,301l.; total, 6,132,258l.; to meet which the bank holds bills discounted, loans, and other securities of 5,763,439l., having in addition cash in hand and investments in Government securities of 994,671l., a sum only 374,671l. beyond the shareholders' paid-up capital and reserve fund, the latter being just 12 2-5ths per cent. of the bank's acceptances. The London and South Western has only deposits and current accounts of 656,490l., the Central of 590,102l., and the Metropolitan of 425,070l., the rate of dividend on the paid-up capital being respectively 5, 8, and nil per cent.; whilst four other banks paid dividends for the past half-year varying from 10 to 8, and down to 6 per cent. per annum. Thus we have seven joint-stock metropolitan banks out of eleven that pay only nil, 5, 6, 8, and up to 10 per cent. on the capital absolutely paid up by the proprietors, yet the City Bank has had the modesty to ask the shareholders to pay 100,000l. additional capital, and to pay 20,000l. for the privilege, while the past half-year's dividend was only 5000l. in excess of the latter sum. Why not have transferred the dividend to the reserve fund, and have issued the shares without a premium?

Surely the above examples of joint-stock banking do not elevate them above the rank of sheer trading, discount, and highly speculative undertakings, or place them to an advantage when compared with the standard dividend and sound progressive mines of Cornwall, Wales, and the North of England. There is no mine that we know of, or ever came under our notice, that could or ever did inflict such losses and misery upon the proprietors as would unquestionably arise from the suspension and collapse of the least of these struggling concerns. It is now 17 years since the City Bank was started, and, with 740,000l. paid-up capital and reserve, it is only able to declare dividends of 10 per cent. in these prosperous days of trade, manufacture, and commerce. We must not omit to state, however, that the four other banks declared dividends of 20 per cent. per annum for the past half-year—still neither of them added to their reserve funds. The aggregate dividends for the half-year amounted to 540,000l. upon a paid capital and reserve fund of 7,654,890l.—thus the shareholders actually received only 14 1-10th per cent. on their own money in the hands of the directors, whilst the commitments of the four banks extend to the fabulous sum of 85,886,827l., to which, as an element of prospective liability, we may observe that the subscribed capital is not paid up by the sum of 15,800,000l. This, however satisfactory to the customers of and depositors with the banks, ought to entail a watchful observance on the part of shareholders in the future career of these gigantic institutions. The possible failure in the machinery or conduct of the

operations in either of them would inflict consequences so terrible that we tremble to contemplate, and which we sincerely hope will never be realised, for the stoppage of Overend Gurney—black Monday, in May, 1866—would prove a calm in comparison to the ravages of such a catastrophe. Passing from banks, we come to the group of stocks and shares called miscellaneous, amongst which we may name Royal Mail Steam, that pays 10½ per cent.; India Rubber, 11½; and Val de Travers, 15. This class embraces the widest range of securities; but their number is legion, and should at all times be selected with discretion, and after earnest and keen investigation.

In conclusion, we again refer to British Mining enterprise, which now should be encouraged, whilst the prices of tin and copper rule at such satisfactory standards—more especially so as several progressive mines are now upon the *tapis* that promise at an early date to prove unusual prizes.

R. TREDINNICK,
3, Crown-court, Threadneedle-street, Aug. 6.
Consulting Mining Engineer.

TIN MINES, AND MINING IN CORNWALL.

Sir,—Wendron, Sithney, and Breage constitute one of the oldest and still one of the most vigorous and healthy tin-producing districts in Cornwall, and contains many of our most distinguished and productive mines. As for example:—Great Wheal Vor, Great Fortune, Godolphin, Polldown, Wheal Metal, the Porkellis, Lovells, Trumpet Consols, with many others that have rewarded our forefathers, still remunerate the fortunate adventurers, and stimulate the enterprise of capitalists.

Adjoining Trumpet Consols is situated the Wheal Mount Tin Mine, consisting of 1200 shares, issued at 5l. each, and full paid up. The company's grant comprises about 100 acres of land, traversed by several veins highly charged with mineral, and pregnant with those elements and constituents identified with all the profitable and productive lodes in the district. The stratum is granite of a soft and decomposed character, very abrupt in its surface conformation, more than ordinarily crystallised, containing considerable iron and other essential ingredients usually associated with large deposits of tin.

The Trumpet Consols still yields gains of about 2000l. quarterly, and is excavated to a great depth, and in close contiguity with the boundary line of the Wheal Mount Tin Mine. The lodes traverse the latter sett from east to west, and are proved to contain tin of equal quality at the depth already attained. In the opinion of practical authorities this property will soon develop itself into a valuable prize, and rank with the best mines in the district; however, shares in all probability will soon attract general attention, and advance accordingly.

It is only fair to observe that the tin mines of Cornwall are, of all our home industries, most worthy the attention of the investing public; and especially so are those properties situated within the three north and south parallels extending from the Alford, in Philack northwards, to Great Wheal Vor; from North Roskear, Seton, Crofty, and Dolcoath, in the parish of Camborne southwards, through Illogan to South Frances, with other important mines in Wendron. Again, the north and south parallel passes from the Tolguses, on to Carn Brea, East, South, and North Basset, with other valuable mines, situated within the district, to which on this occasion I shall restrict my observations, and which, at a moderate computation, have yielded metallic ores exceeding 40,000,000l. sterling, establishing the area in question to be the first in produce and gains of any throughout the known world. The gold fields of Australia and of California, the silver mines of Mexico, Peru, and Nevada, or the diamond fields of the Cape, must hide their diminished heads when compared with this renowned district, situate in and around the granite hills of Mid-Cornwall.

Dolcoath is a veteran of a century's growth, and has yielded not only copper and tin, but also large quantities of silver. The Devon Great Consols, which yielded about 1,200,000l. profits upon 1024l. outlay, has not returned a moiety of the product of the Dolcoath Mine, which still declares two-monthly dividends of 8592l. per share, equal to 51,552l. annually, and sells for the large sum of 350,000l.; and a few weeks ago the price was 425,000l. Cook's Kitchen adjoins, and it is asserted that the gains have exceeded 1000l. for every fathom in length on the course of the lodes. I can remember the mine profitable 40 years ago, and the market price is now 175,000l. Tincroft stretches further east, on to Carn Brea; the former is marketable at 360,000l., and the latter at 180,000l. The management of the two mines is vested in the same gentleman, and during his control the shares in the former have advanced from 3l. to 4l. per 6000th share, and of the latter from 8l. to 10l. per 1000th share; the dividends are equal to 51,000l., and 16,000l. annually, based on the last dividends. East Pool sold 30 years ago, 5l. per share paid, at 525l., and the dividends averaging 75 per cent. on the capital over the whole period. The Croftys, Tolguses, Roskears, and Setons, with North Pool, in this district, have in the aggregate given beyond 1,000,000l. in dividends. In the south stand the Basset range of mines, comprising East, West, North, and South, with Wheal Basset; these have respectively afforded gains of about—1,55,000l.; 2, 105,000l. on uncalled up capital; 3, 150,000l. on 9000l.; and 4, South and Wheal Basset, 325,000l. on 2624l. outlay; whilst at stated epochs in their career they were marketable at 125,000l., 300,000l., 325,000l., and 315,000l. The Buller and Tresevan are rather to the east of these magnetic currents, yet the shares in the former sold at 1250l. each, with 5l. paid, and the latter at 2600l. per share, with 32l. 10s. called up; the profits of the former having been 300,000l., and of the latter 434,500l., or thereabouts. West Frances and South Condurrow are both within the range of the cross-courses traversing this district, and must be regarded as two sound progressive mines. The South Frances has paid in dividends 176,000l. upon a capital of 9174l. 8s. Still further south we have the rich mines of Wendron, which stretch from east to west for a distance of five to six miles into the parish of Breage. The veins almost invariably, at their junction with the magnetic currents in the cross-courses form rich and lucrative deposits of minerals; and as these extend into the Trumpet Consols and Wheal Mount Tin Mines, and the lodes are already proved to be exceedingly productive, we can, with every confidence in the future, invite attention to this property—which is so fully described and certified in the reports of practical mining and local authorities that little reasonable doubt can be entertained that the Wheal Mount Tin Mine will soon become a prize of great and exceptional importance.

R. TREDINNICK,
3, Crown-court, Threadneedle-street, Aug. 7.
Consulting Mining Engineer.

THE PROS AND CONS OF SILVER MINING.

Sir,—It is an axiom of mine that a one-sided representation of facts is scarcely equal, and by no means as reliable, as one-half of the whole truth fairly told. I am incited to this communication, and the train of thought it may suggest and convey, by the *ex parte* views which are communicated to you by your numerous correspondents of mining in this part of the world, and through you to your tens of thousands of readers throughout the civilised world.

No one can have read my correspondence, which you have done me the favour to publish from time to time in your widely-extended and highly-esteemed Journal, and who credit me with sincerity and truthfulness in what I have written, but must be convinced that I entertain a decidedly high opinion of the prolific character of properly constituted metalliferous veins in the State of Nevada. Not but that its sister contiguous states may be equally good, but I am not so well acquainted with them and their resources of mineral wealth as I am with those of Nevada, and therefore cannot speak of them from a personal knowledge of their capacity in this respect. A very familiar maxim has it that “good wine needs no bush,” and may it not with equal propriety be said that good mines need no bluster. Yet, at the same time, it must be admitted that for good mines even to be known simultaneously with contemporary events special efforts must be made, and the medium of the press resorted to. “Truth is sometimes stranger than fiction.” It is especially so in regard to mining in Nevada, when only the wonderful side is presented to the view. To seek to inflate that which already excites our wonder is an act of supererogation more injurious to its object than helpful, and, therefore, can never be justly appreciated. If candour is a virtue its exercise is never more beneficent than in its

Sin.,—Through the medium of your valuable paper I read in the Journal of June 29 report from Capt. Waters, on West Tankerville Mine, that "the 48, South Wood vein, had very much improved, being worth 147. per fathom for lead; and 344. for silver." California shaft, below the 18, was worth 142, per fathom; and that the wine of the 19, was worth 19. Believing in the truth of the above report, I purchased some shares in the mine.

On July 4 Capt. Waters reported "No change in the mine." But judge of my dismay on reading his report of July 11. The 48 south vein yielding one stone of silver, is valued at 154. tons. The 19, at 19. The 18, at 142. The wine below the 18, is valued at 154. tons. On seeing this report I wrote to Capt. Waters, asking

him whether the mine was falling off at the above points, as the 43 south was the part he placed so great an interest in, and I could not understand the difference in the reports; but not having received a reply, and as I do not write as "bear," but as a shareholder, I think I have a right to put a question to the Captain, and
C. J. R.

THE PANT-Y-MWYN MINE.

[illegible]

MINING IN ANGLESEY—PANT-Y-GASEG.

MINING IN ANGLESEY—PANT-Y-GASEG.

Since having visited PANT-Y-GASEG, I herewith hand my report of inspection since March 7 last. The lode cleared out the water and timbered down the shaft, some 3 fms. 2 ft., and driven on the Pant-Y-Gaseg lode west 4 fms. 4 ft. 8 in.; opened 3 fms. 2 ft. at the lode in Porthwen Bay, named Shillitoo's lode, cleared and macerated for the safety of the miners, and driven on the course of the lode 23 fms. 6 in., good for the safety of the miners, and sinking a winze about 9 ft., discovering a level formerly called the "level of the Romans" (where some native stone hammers were found), building and driving on a beautiful lode (this is called the "level of the Romans"), and driving on the level of the Romans in a most economical manner, stone having been used in great abundance, directed in the mode of timber (a material item in mining); in fact, I must give great credit to the most capable agent, Mr. J. M. Williams, and also to the just and honourable management of the whole of the miners in carrying out the works under him. In driving the Pant-Y-Gaseg level the lode at times turns out beautiful stones of copper ore, and it is now improving, in a change of ground, the quality of the copper ore. It is a stone of a very pure description that gives many mines, if mine to small beds of it. Splendid stones of copper ore have been taken in driving Shillitoo's lode, of which I am happy to say is changing in more congenial ground favourable to the lode, and some of these vast beds of copper which so many times have been found in these valuable mines, Mona and Parys, that has realised over 40,000,000*l.*, and has been the means of ennobling two families. The strata and quality of ore are the same as those two wealthy mines, now in full work, and the quality of the ore is the same as the oxide of manganese of 44 per cent. (Johnson and Matthey's assay), and the same of the oxide of manganese in my presence in Roman level full 40 per cent. I defy very few mines to produce a better, and this at so shallow a depth great expectations are to be considered from this lode.

[illegible]

ST. JOHN DEL REY MINING COMPANY.

ST. JOHN DEL REY MINING COMPANY.

§ 19.—To the shareholders:—that myself there must, I think, have seemed a touch of absurdity in the announcement in your last number, that "St. John del Rey" should be improved, to 18, 20." I say absurd, because a glance at your Share List shows the fact that the improvement was caused by a call of 2¢. 10s. having been paid on July 29, and we know another similar improvement, or call of 2¢. 10s. is due on October 29. I wish in no way to blame the directors for making these calls, but simply to state facts. The making them is indeed an absolute necessity, and I only regret that this necessity was not sooner recognised, as it would have prevented the needless loss of time and delinquencies at \$3 in January, to be paid off at par in the following July or October. The company's resources can now ill afford any more mistakes, and my object in writing is to prevent a possible recurrence of such in another direction.

Some months back you published a letter, by a writer unknown to me, strongly urging the directors to take an independent opinion on the state and prospects of their mine. I thought then the advice well worth attention, and the calamitous events which have since taken place have only made its adoption still more desirable. I know, of course, that the water which caused such serious damage has been greatly lowered; but I also know that such lowering was simply a matter of time, dependent on providing the needful pumps, and that the real trial will begin when the sinking of the shaft is resumed. As the Chairman truly said—"We are not yet out of the wood." Waiving the question of the position of the new shafts, there are three subjects specially on which fuller information is, to my mind, very essential:—the dangerously shifty state of the ground in the neighbourhood of the workings, the liability to future eruptions, and the sufficiency of our remedies for quelling and controlling such lowings. The directors cannot be ignorant of the opinion on these points prevalent in Brazil outside their own staff, and a really independent report and estimate would be, they may be certain, a valuable reassurance to many besides the writer. *

August 7.

A SHAREHOLDER.

ECLIPSE GOLD MINING COMPANY.

ECLIPSE GOLD MINING COMPANY.

§17.—I am a shareholder in this unfortunate mine, and am at a loss to understand the conflicting reports we receive from the different managers. For late manager says that we have a fine vein of silver ore, and that the burning smelting furnaces for the reduction of the ores; when the earthquake occurred these furnaces were reduced to ruins, and the manager killed. A new manager has been sent out, and his first report stated that he feared these furnaces would not be much wanted, as he could find very little silver ore there, and what was there was principally chloric, which was better miller and amalgamated. He also stated that the means employed for saving the gold had resulted in a great loss of fine gold; also, that a great deal of the gross levels had been lost, and that the manager had stated that he has completed the smelting furnace. I want to know why he has replied that he can find so little ore to smelt? His first clean-up has resulted in a yield of \$4 only per ton; hitherto we have had nothing under \$5 per ton, and some as high as \$22. It does not appear that the present process saves more gold. I have been informed by more than one competent person who has been at the mine but there is a considerable quantity of silver ore in sight, and every appearance of it being cut out well; also, that it is enough to melt and save to supply the mill for two or three years. I would like to know the correct state of affairs, and suggest that some thoroughly experienced and honourable mining captain, should be at once sent out to the mine—a man that has had great experience in gold mining; it is no use having any other experience in this mine.

SPYKX.

[For remainder of Original Correspondence see to-day's Journal.]

ECLIPSE GOLD MINING COMPANY.

The following is a report from Capt. John Tambling, who has recently returned from the mines:—

Sir,—You will confer a favour on me by inserting the following remarks in your valuable Journal. Having just returned from California, I find on reading the reports of Mr. Jones, who is now the manager of the Eclipse Gold Mine, that through misrepresentation he has tried to injure the good name of the late manager (Mr. Henry Tregellas), who has been called away by Him who giveth life and taketh it again. I am well acquainted with the Eclipse Mine, and the way it was managed under the supervision of Mr. Tregellas, being the mining captain from the time he (Mr. Tregellas) took the management up to the time of his death. I was hired by him at San Francisco to go as mining captain to the Eclipse Mine, and went in company with himself and Capt. H. D. Spoones, the clerk of the mine, where we arrived on the 1st of April. The Eclipse Mine is located on the western slope of the Inyo mountain range. About 10 miles from Owen's River, Owen's Valley, near this river, stands the Eclipse Mill.

Remarks of Mr. Jones on the property: "I have," said he, in his report of May 8, "briefly recapitulated the principal features of this property, and beg to say the entire management has been that of the most extravagant and non-practical description I have ever met with during my mining experience." In 40 years of mining Mr. Jones would have done well to point out the extravagance, knowing there has been more than one manager there since the mine started. When the late manager (Mr. Tregellas) went to the Eclipse Mine, Jan. 1, 1871, he found the parties then in charge erecting an atmospheric mill; that mill proved a failure. I know that everything was done that could be done to make it a success, but it was impossible; it could not be worked to a profit in Owen's Valley. Mr. Jones might have made reference to this when he spoke of extravagance; if so, it cannot be laid to the late manager. The atmospheric mill proving a failure, a new mill was wanted, and was being made. This new mill is worked by water-power, a ditch being dug for five miles in length. It is a very cheap affair, as the books will show. It was let on contract, and I think it would be impossible to get the same amount of work done again in that valley for the same amount of money. I can not see anything extravagant about the ditch.

The mill has 30 stamps, with foundation graded for 15 more, and for which the mortars and timbers are on hand; and a 13 stamps mill, purchased by the late manager, known as the Ida mill, is only a quarter of a mile away. I may call this extravagance, but I cannot see it. If a 30-stamps mill is wanted a 50 is, for the Eclipse Mine will supply a 50-stamps mill just as well as a 30. "The position of the mill is good," said Mr. Jones in his report; but, said he, "I regret to say that the greatest essential to a good mill is wanting here—a good foundation. The foundations have not been excavated to a sufficient depth, the timbers for the foundations having been placed on a pile of sand; a little water, which it is impossible to prevent, has percolated through the foundations, and the consequence is a shaky fabric." By these remarks Mr. Jones would try to make the public believe that this was bad management in the late manager, for he says the foundations were not excavated to a sufficient depth. No man in Owen's Valley, endowed with common sense and good will, could make such a statement. Almost every building in Owen's Valley has the same kind of foundation. It was impossible to get a better one. We had a proof of this in sinking the shaft for the turbine; that shaft was sunk 20 feet through sandy clay; at the depth of 18 feet water was struck, consequently a better foundation could not be got by sinking deeper.

Blanket concentrator, pan grinding, and amalgamation have been the principles adopted for the saving of the gold, said Mr. Jones. The result has been, he remarks, a great loss of gold from imperfect concentration. No one will deny that but it could not be avoided; no other man could have done better. The first two runs the weather was fine, and the blankets could be washed often, which was done. From that time up to near the time of the fearful calamity the weather was unfavorable for blanket concentration; for weeks together they were frozen up from a cold that lasted nearly a day. But the manager was careful to have the blankets saved all the time, and he intended to concentrate with circular buddles, which are considered the best machines ever invented for concentrating, would have been working in November last, if the material could have been got; the lumber was ordered in September last, but was not delivered until the following March, nor could it be got sooner.

Mr. Jones may call this extravagance, but I am satisfied it did Mr. Traggall live to carry out his plans in concentration, and then extracting the gold by chlorine gas, he would have made it a grand success, with little cost. Chlorination has never failed in California, when properly worked. I know what it will do. I have seen it tested by pan process and chlorine gas; the result was that 1 ton of concentration at the rate of \$100 per ton, produced \$800 in gold. The same would be said at the Eclipse Mill is worth 30 cents per ton, as compared from 90 cents per ton, as extracted by the chlorine process, and it can be put through the whole process for \$12 per ton. Taking this into consideration, I see no extravagance on this point.

The Tramway: Here again Mr. Jones has shown his prejudice and want of good principles. The ton, ft. of tramroad from mill to mine when completed will be a little over three miles. Three-fourths of this distance, said Mr. Jones, has been taken at a comparatively small cost, and the balance will be paid for by the gold he said. He might just as well have said that all the houses that fell in the valley during the severe earth shock were built in a very loose and imperfect manner. It would be a greater credit to Mr. Jones if he had told the truth. I say the tramroad before the earth shock was a good one. To prove this three small mules used to draw nine and ten cars at a time to the mill, with 1 ton to 1½ ton in each car. Mr. Jones said that the ores, after leaving the mine, as per present arrangement, would be taken to the mill by a different route, and that the mules would be dispensed with. All who read the late managers reports are acquainted with this. To obviate this expense a tramroad was graded and laid around the mountain. There were also runners and all the necessary lumber for laying the incline to connect with the road below, but instead of Mr. Jones doing this, which would not take more than three weeks, and then convey quartz from mine to mill for 50 cents. per ton, he spent money in repaving the incline, which will cost by taking quartz by the old route from \$20 to 25 per ton, and yet he speaks of extravagance and non-practical management in the life manager.

mine management in the late manager. Mr. Henry Tregellas, took charge of the Eclipse Mine, Haymen's shaft was down to the depth of 220 ft. The tunnel at that depth was 9 ft. from shaft, and during his management the shaft was sunk 129 ft., making it 40 ft. below the 300 ft. tunnel, and which said tunnel was driven from shaft 108 ft., in a hole from 5 to 7 ft. in width. The above 220 feet tunnel was driven by him 87 ft., hole varying from 5 to 7 feet. The 160 ft. tunnel was driven from shaft by his predecessors 130 ft. Since then it has been driven 114 ft., making the whole distance from shaft 244 ft. The 190 ft. tunnel has been driven from shaft 108 ft. to 120 ft. by Mr. Jones, and the 160 ft. tunnel was driven from shaft 108 ft. to 120 ft. by Mr. Jones' report that the whole of the ground between and above those tunnels said to have been stope-d away. This I cannot understand. It must be a great mistake, if, not something worse, and I am almost led to believe the latter. About 300 tons of quartz have been taken away from the stopes in the back of the 300 ft. tunnel, and there are still thousands of tons of good quartz standing between this tunnel and that above ready to be taken away, in fact, enough to supply the pre-

men mill from 6 to 12 months.

From the 220 to the 160 tunnel not more than 100 tons have been taken away. Here, again, are thousands of tons of quartz that ought to pay well in the mill. From the 160 to 100 ft. tunnel there have been about 150 tons taken, 50 tons in the last working and about 100 since the water-mill started. In the back of this 160 ft. tunnel there is a good lode standing, from 70 to 80 ft. in length, and as the mountain rises going north, there must be from 200 to 300 ft. of backs standing; so that it will be seen the mine's reserves consist in thousands of tons of good milling rock, sufficient to supply the present mill for years without opening any new ground. What Mr. Jones meant by saying on May 8 that the whole of the ground between and above those tunnels has been stowed away I cannot tell. One thing I can say, it was a false statement, and a proof of which he has himself supplied us with, as in his report of June 15 he says the mine is of a cheering character, and the stopes looking well. How could these stopes have been opened up if he had not known that they existed? In the same report he acknowledged the fact that up to that time he had not employed a single man in extending the tunnels, but should, he said, resume the driving of them on the following Monday? Even had he done so the work accomplished in so short a time would have been too little to open up any available fresh stopes, as all who are acquainted with mining ground must well know. I cannot account for Mr. Jones's statement in May otherwise than by supposing he allowed his prejudice to overcome his better judgment.

Silver: A tunnel has been driven 30 ft. through good silver rock. I cannot tell how extensive this rock is, but it opened out well, and was looking well when I left. This tunnel is driven south of the Eclipse mine, between the 150 and 220 ft. levels. The best silver is found in many other points of the mine. At the 220 ft. tunnel there is, or was when I left, a branch of silver ore from 6 to 15 in. in width, and over 50 ft. in length; also from the 100 ft. level many tons of silver ore have been taken away, and I have no doubt when the tunnels are extended, and the mine more extensively opened, greater returns of silver will be realised than many look for; for it must be remembered that the Eclipse Mine is in the Inyo range, and which is celebrated as a silver-bearing district. There were at the furnace when I left about 150 tons of silver ore, worth, as per Mr. Polkinghorne's assays, \$138 per ton; but a superior person, and one who has proved him to be no less than a classed assayer, has since been sent to assay the ore, and that. If nothing had happened by the time they had worked the ores at the furnace into bullion, just as many tons would again be in readiness; and if the silver continued as it did while working on it, and there were no indications of its failing, it would be kept on at the same rate.

Mr. Henry Haymen, who is the chairman of the board of directors, in said report to the shareholders at their general meeting, after his return from California, said: "The letter confirming the telegram, either could be sent to the company." He goes on to say—"The amount of silver ore at surface when I visited the mines certainly would not justify, as far as I was able to see, any such telegrams." Mr. Haymen might just as well have said that he could not see anything that would justify building the mills, as, if Mr. Jones's word is to be relied on, Mr. Haymen never saw the Eclipse Mine. I saw Mr. Haymen and Mr. Jones on their way to the Eclipse mill, and was at the town of Independence on their return, when Mr. Jones told me that he (Mr. Haymen) did not go to the mine. It must be remembered that the Eclipse mill and furnace are over three miles from the mine, and the public will judge if Mr. Haymen should not have visited the mine, and satisfied himself as to its resources for silver, before condemning the sending of the afore-mentioned telegram. Mr. Jones also, in respect to silver, said in his report to the stockholders: "A reasonable quantity of silver ore is known to exist, but it will not be much wanted, as I cannot find much silver ore here, and the little that is here is principally chloride, which is much better milled and amalgamated." Since then he has reported—"We have completed the blast furnace for smelting the argentiferous ores." Now, if there were very little silver ore to be found there, and that little better for the mill than the furnace, why go to the expense in erecting the furnaces? The only conclusion I can come to is that Mr. Jones in his first report tried to condemn everything the late manager advanced. The turbine then erecting as a motive power for driving the fan-blast was condemned, and therefore removed, and a new over-shot wheel is now being built for that purpose. I hesitate not to say Mr. Jones does not possess a good knowledge of the power of turbines, and one is almost led to wonder why he did not also condemn the one with most claim to a right to drive the stamping mill. Whatever Mr. Jones or most of our small men may think of the late manager, he was a practical and competent manager of the late superintendent, there are many prominent citizens in Owen's Valley, who have had many years experience in gold and silver mines in that country, can testify with me to the truth, that Mr. Tregellas, the late manager at the Eclipse Mine, was a man of extraordinary ability, a good mining engineer, and an honest, hard-working man, one who knew how to, and did, put every dollar to the furthest for the company's benefit.

amalgam was procured with other valuables. This small amount was really 25 lbs. of amalgam, and was delivered to Capt. Scoones, who, in turn, delivered it to Mr. Polkinghorne to be retorted and melted, which should have yielded at least 50 ozs. of bullion, worth from \$7 to \$8 per ounce.

In conclusion, I beg to say, as I have always said, the Eclipse Mine is a good one, and with proper treatment of the ores and good management it is my decided opinion that it can be made one of the best paying mines on the Pacific Coast.

St. Agnes, Cornwall, July 27. JOHN TAMBLYN.

THE EMMA MINING SUIT.

TERRITORY OF UTAH—IN CHANCERY—SALT LAKE CITY,
JULY, 1872—CHIEF JUSTICE M'KEAN PRESIDING.

The Emma Silver Mining Company (Limited) plaintiff, v. the Cincinnati and Illinois Tunnel Company of Utah—William W. Chisholm, James F. Woodman, James M. Day, William B. Smith, John Chisholm, John Meely, and William Slansby, defendants.

This is a suit in equity, in which the plaintiff prays for a preliminary injunction to restrain the defendants from continuing certain alleged wrongful acts during the pendency of an action of trespass brought by the plaintiff against the defendants for alleged trespass upon certain silver mining property claimed by the plaintiff, but in the possession of the defendants.

The facts are stated in the opinion of the court.
Hempstead and Kirkpatrick, T. W. Park, Luke P. Poland, Wm. M. Stewart and
C. J. Hillyer, solicitors and of counsel for the plaintiff.
Marshall and Carter, J. C. Royle, E. S. Joslyn and C. W. Bennett, solicitors and
of counsel for the defendants.

of counsel for the defendants.

John P. McKean: Some of the defendants, and certain other persons named in the complaint, claim in this suit, formerly claimed, held, and to some extent developed, a certain mine of silver bearing ore, in the Little Cottonwood Mining district, and described as follows:—2400 linear feet of and upon that certain vein or lode known and described as the Emma lode, and commencing at the discovery shaft upon the said lode, known as the Woodman shaft, and thence running easterly, following the course of the said lode 2400 linear feet, and commencing again at the said discovery shaft, and thence running easterly, following the course of the lode 800 linear feet, making in all 2400 linear feet on and along the said lode or vein, and embracing the same with all its dips, spurs, angles, and variations for the said distance of 2400 linear feet, with a space 50 ft. in width upon the surface on each side of the said vein or lode throughout the whole extent of said claims for the purpose of working thereof, and more particularly described in a map attached to the complaint.

Afterwards the said claimants and others who had become jointly interested with them, their heirs, assigns or assigns conveyed all their interest in the said mine to the Emma Silver Mining Company of New York and on May 30, 1871, the last named company by deed conveyed the same to the Emma Silver Mining Company of New York. Previously, on Oct. 14, 1870, the parties then in possession of the mine applied to the Government of the United States for a patent for the said mine and premises; and on Aug. 24, 1871, the said Government by letters patent granted to said applicants, and to their heirs and assigns, the said mineral claim or premises above described, and in such letters patent particularly designated, with the right to follow said Emma deposit, vein, or lode to the distance of 2400 linear feet, with its dips, angles, and variations to any depth, although it may enter the land adjoining, to have and hold said premises, together with all the rights, privileges, immunities, and appurtenances of whatsoever nature thereunto belonging. Afterwards, on Oct. 14, 1870, the said parties, by deed conveyed their interest in the said mine and premises to the said Emma Silver Mining Company of New York, and the said company by deed conveyed the same to the Emma Silver Mining Company of New York by deed conveyed the said mine and premises to the plaintiff, in consideration of the sum of \$2,500,000, and the plaintiff immediately entered into possession of the property so conveyed.

The various parties that have held possession of this mine have in its development constructed many works, such as shafts, tunnels, drifts, winzes, and rises, in the mountain in which the mine is situated. In the same mining district are the Monitor and Magnet lodes, and the Cincinnati lode, which are claimed and held by the defendants, who for some time past have been constructing a tunnel, called the Illinois Tunnel, for the development of those lodes. About the middle of last April the men at work on the Illinois Tunnel broke through into the works constructed by the plaintiff or its grantors, in the westerly part of what the plaintiff claims to be the developed portion of the Emma Mine. The plaintiff's workmen stopped up the opening thus made, and for a month and a half there appears to have been no further interference. In June, owing to the thawing of the snow on the surface of the Emma Mine, the defendants went for some days to the plaintiff's workmen were thus prevented from penetrating to the westerly part of the plaintiff's works; when, however, they at length succeeded in doing so they found all the developed floors or drifts in that part of the works, and above the first or railroad floor or tunnel in the possession of the defendants, whose employees forcibly held the same and drove back the plaintiff's employees. This disputed ground contains a large amount of very rich silver-bearing ore. The plaintiff claims that this ore is part of the Emma Mine; the defendants deny it.

There are two, and but two, questions in this case—the one a question of fact, the other a question of law. The question of fact is this—is the silver-bearing ore of which the defendants are holding possession a part of the Emma vein, lode, or deposit? If it is not, no injunction can issue against the defendants: if it is, then as matter of law, can the plaintiff hold it, it being conceded to be in the adjoining lands outside of the surface limits of the plaintiff's patent? These are the questions which the court must determine. The court cannot suppose that there is a conflict of title between the Monitor and Magnet and Cincinnati lodes and the Emma lode. But there is absolutely no proof to sustain such position. The controversy is between the Emma Mine and the Illinois Tunnel, and the Monitor and Magnet and Cincinnati lodes are no more involved by the proofs adduced than if they were situated in another range of mountains. It is the intention of the court studiously to refrain from expressing or intimating any opinion on the question of fact presented in this case. What questions they grow out of the future development of the remarkable mining interests of this Territory cannot now be fully known nor conjectured.

But as we proceed to a consideration of the question of fact in this case. The defendants have produced the affidavits of numerous witnesses who formerly worked in the Emma Mine, and who testify that that mine is a deposit, enclosed in limestone, and not a vein; and some of them say that there is no ore nor vein connection between it and what they call the Illinois deposit, or the body of ore now in possession of the defendants. The affidavits of other witnesses of varied experience in mining matters have also been produced on the part of the defence.

Dr. Orville H. Congar testifies that he had been engaged in mining more or less since 1850, in California, Montana, Nevada, and since 1884, in Utah; has been an assayer of ores; has practical experience in mines, directing and working in them; has scientific knowledge of mines, mineral formations, and their surroundings. He says: "I was never in the Emma Mine until I visited it on July 8, 1872, in company with the chancellor in this case and other gentlemen. At this time the deposit was called the Illinois deposit, and the Emma Mine was called the Emma deposit. It originally struck by Woodman, and floors 4 and 7, leading from one deposit to the other, were pointed out to us, and all examined carefully by me, except a portion of the Woodman deposit. A part of the Woodman deposit was caved in and could not be examined. I also examined the tunnel aforesaid. I examined with special care the said floors 4 and 7. On floor 7 there was a cave at one end; but at the distance of 30 ft. from said cave, going in the direction of the deposit held by said tunnel, there was barren rock with no ore connection, the floor being run through a formation known as quartzose and calcareous breccia, corresponding with much of the walls enclosing the ore deposits. On floor 4, on one side I saw a nodule of ore about 16 in. in diameter and about 2 ft. long, of oval form; also another nodule about 6 in. in diameter, nearly spherical, about the centre of the 20 ft. barren rock on this floor, corresponding with the floor above. With the exception of these two nodules, this floor also ran through barren rock, there being no ore connection, and the formation was the same as that above described. When the said deposits, and the openings shown me to show an ore connection between the said deposits, and I am perfectly satisfied that these openings or floors do not show an ore connection between the two deposits aforesaid. In my best judgment there is an absolute break in the ore connection on the two floors aforesaid of from 20 ft. to 30 ft." "From my experience as a miner, my knowledge of geology and mineralogy, I believe that this break in the ores aforesaid existed before the formation of said ore deposits." "All the observations I have made satisfied me that said deposits are separate, independent, and distinct."

Prof. J. H. L. Tuck testified, on the part of the defendants, that he has been engaged for 22 years in working, developing, and examining mines; is a geologist and mining engineer by profession; has worked and examined mines in California, Colorado, Nova Scotia, North and South Carolina, Virginia, and in Utah for a year and a half; that on July 8, at the request of the defendants, he visited the Emma Mine and the Illinois Tunnel, and the property in dispute, and made as careful an examination as the time employed and the condition of the mine would permit. He says—"That he passed through the workings of the Emma mine and floor leading from level number five to level number four, where he found the ore connection entirely broken off there by the intervention of the country rock, with no indications whatever of a connection between the two said deposits. That on the fourth floor deponent was unable to traverse the entire length of the level on account of a bad break in the timbering. Deponent further says that upon this floor he measured 30 feet of country rock intervening between the two said deposits. Deponent further says that upon the seventh floor of the Emma workings he found by actual measurement a like distance of 30 feet of country rock intersecting the said Emma deposit and the said Illinois deposit. Deponent further says that floor number three starts upon a level, and rises by an angle of 45° south, entering floor number four; that there is country rock intervening between floor number five, the same body of rock that he passed into the Illinois Tunnel by way of floor number four. Deponent further says that the general trend of both of said deposits, the Emma deposit and the Illinois deposit, is east 55° south, dipping heavily to the north-east at about an angle of 45°. Deponent further says that he examined with great care the workings leading from said Emma deposit to the said Illinois deposit, and that nowhere did he find a connection between said deposits, and he pronounces the same to be separate and distinct deposits of different origin."

Some portions of the above affidavit are unintelligible to the court, inasmuch as the descriptions of the floors referred to and in dispute the second, third, and fifth floors have never been opened; and the Illinois Tunnel is entered from the seventh, and not from the fourth floor.

James E. Matthews, and from the testimony of the defendants, testifies that he has been engaged in mining for several years in Wisconsin, Illinois, California, Idaho, Nevada, and Utah; that he examined the Emma Mine and the Illinois Tunnel on July 8 last; and "that he found the said Emma deposit and the said Illinois deposit to be separate and distinct deposits of ore, separated by at least 30 ft. of country rock, and that between said deposits there is no connection whatever."

James E. Matthews testifies on the part of the defendants that he was formerly superintendent of the Emma Mine, and left that position Aug. 13, 1871; that at that time the ore in the north-west corner of said deposit, above No. 4 floor above, had been worked out, except a very small amount on floor 7 above, not to exceed 1 ton in deponent's opinion; that at floor No. 8, above the tunnel floor or level, in the south-west corner of said deposit, deponent found a seam of ore extending south-westerly for a distance of about 30 ft., which showed, and continued to bear or show, ore while the witness was on the said hill, at a distance of 30 ft. from the south-westerly corner of said deposit. And deponent further says that from his knowledge of said hill, and judging from the similarity of the places on the hill above the 'Woodman Deposit' and the Illinois respectively, he has always been of the opinion that another deposit, and a similar one to the Emma, would be discovered at the point now in controversy, and that in his examination of the casing around said Emma

GOLD IN NEW ZEALAND.—A letter from Dunedin (June 12) says—
 "The gold fields of Otago and Auckland threaten to be eclipsed by the recent discoveries at Reefton, on the west coast, and considerable settlements are being formed there. It is not at all uncommon for an experienced miner to wash 1½ oz. of gold in a day; and at a place called Tinker's Gully a small party have obtained 170 ozs. of the precious metal in two weeks. Quartz mining, however, is the ultimate form to which this industry is likely to take, and the capital required to erect and maintain the requisite machinery to crush and wash the broken stone, is carried on by companies. A dozen or so miners lay down 50l. or 100l. each, and work in common. A claim is purchased, each man receives so much wages weekly, and every now and then a division takes place of the surplus. A new comer can join the concern by laying down his entrance fee and agreeing to work. To obviate the difficulty sometimes experienced in determining the probable value of stone, Prof. Black, the newly-arrived lecturer on natural science at the University, is engaged to examine and analyse the specimens presented to him by prospecting miners, and this desirable arrangement will give those wishing to invest in these ventures a fair opportunity of judging what they may reasonably expect to gain by their venture."

CHOLLAR POTOMI.—At the annual meeting, on July 8, the superintendent's report showed 37,789 tons ore extracted during the year ending May 31. The amount milled was 35,930 tons, averaging \$26.17 per ton. During the previous year 41,631 tons were extracted, and in 1869-70 there were taken out 56,636 tons. The company paid eight dividends during the year—seven of \$1, and one of \$2, or \$9 per share, aggregating \$252,000.

MACHINERY FOR CASTING ARTICLES IN METALS AND ALLOYS.
Some improvements have recently been made by Mr. P. H. ASHBERRY, of Sheffield, under his patent of 1866. According to the improved arrangement the moulds are fixed and the pan is movable, the arrangement for opening and closing the moulds by means of a top or link on the sliding shaft worked by the crank pin on the driving shaft; the fallowing of the pan to and from the moulds by means of levers and rods connected with the crank of the driving shaft; the manner of working the valves or openings in connection with the force pump by means of a rod having a valve block, which is actuated through suitable levers by a cam and spring; the bit or conductor between the exit from the pan and the entrance to the moulds; the mode of raising the lever of the force pump by the crank or driving shaft; the catch retaining the lever of the force pump and the rod actuated by a spring to knock it away; the mode of stopping the machine, when the moulds are either opened or closed, by means of a weight which is raised by a cam on a driving shaft and is allowed to fall at the proper time on the end of a lever which throws the clutch box out of gear; and the manner of weighting and stopping the lever of the force pump by means of a double-ended lever, one end of which carries the weight and is connected with the lever of the force pump, and the other end working in guides may be stopped at different points by a pin or other appliance.

deposit deponent discovered no run of ore leading from said deposit except the one leading in a south-westerly direction at floor No. 8, above the tunnel level above described."

The plaintiff has produced the affidavits of many witnesses, some of whom are in the employ of the company, who testify that in all the tunnels, drifts, and works of the plaintiff there is continuous silver-bearing ore connection, and that the Emma vein or deposit, and the ore of which the defendants now hold the possession, are parts of one and the same vein or deposit.

The affidavits of other witnesses of varied experience in mining matters have also been produced on the part of the plaintiff. Two reports on the character and condition of the Emma Mine, made by Prof. Benj. Silliman in October and February last, together with an affidavit of the professor, were offered in evidence; but the testimony was objected to by the defendants' counsel, on the ground that the affidavit was sworn to before this action was commenced, and the court rejected it.

Thomas H. Bates testifies on the part of the plaintiff that he is a civil engineer by profession, has been engaged in mining since 1860, during which time he has paid particular attention to the examination of mines and mineral veins in Utah; that he is now interested and engaged in developing several mines in Big and Little Cottonwood canyons; that his first visit to the Emma Mine was in July, 1869, and he frequently visited it and examined its works from that time until the present; that he visited it in February last, in company with Professor Silliman and others; it was then in an excellent condition for examination, every part of it open to inspection; the main drifts, that had been run in a north-westerly direction, were all open, fresh, and disclosed the material through which they were run with certainty; and, in a north-westerly direction, to the point where the Illinois Company entered the works of the Emma, the foot-wall was followed in the various drifts and rises; that in leaving the main chamber in the old workings, and running north-west on the footwall, vein matter was found in all the drifts. What I mean by vein matter is ore, clay, broken rock, or mineral of any kind found between the walls of the fissure, and filling the same. There need be no ore to constitute vein matter, for the fissure may be entirely filled with foreign substances. In the tunnel floor of the Emma Mine the ore from the point where the tunnel enters the large chamber to the winze which connects it with the fourth floor, about 250 ft., is continuous ore. On the fourth floor the tunnel is run through vein matter which is not all ore, but is interspersed with more or less ore. Near the bottom, on the south side, I am quite positive that there is a continuous streak of ore in this tunnel; but I regard that as immaterial, as the substance, or veinstuff, found here is precisely the character of stuff followed by all miners in prospecting for mines, and in exploring for the continuance of veins. The drift on the seventh floor above is nearer the surface, and exhibits more foreign substances which have fallen into the fissure; but there is no point in this tunnel which would not be followed by every miner of ordinary experience in exploring this vein. The Illinois Tunnel is cut through hard country rock. He again visited the Emma Mine on July 8, 1872.

Senator Wm. M. Stewart testifies, on the part of plaintiff, that he had been interested in mining operations over 22 years; that he has owned mines, worked in them, carefully examined mines with a view of investing himself, and advising others, and of conducting mining litigation—he being a lawyer by profession; that he visited the Emma Mine in February last, in company with Professor Silliman; that the characteristics of the mine (aside from the great richness of the foot-wall, which most interested him) were the well-defined foot-wall, which appeared throughout the entire workings, furnishing a guide for explorations in search of new bodies of ore, and indicating the dip and strike of the vein; second, the great width of the fissure; the evidence of motion which is exhibited in the fissure. The three characteristics above mentioned are regarded by miners as indicating mineral veins of great extent and permanency. The deponent again visited the mine on the 8th inst., and testifies that he has twice examined the drift on the Tunnel level, and found in the whole extent very little foreign matter, and nothing to break a continuous ore connection. On the fourth floor, and a corner there is a large proportion of soft vein stuff, which cannot properly be called ore, but masses of ore are found mixed with this vein stuff, pasting it together in a manner never seen in country rock outside of a mineral vein. The seventh floor above presents a singular appearance, with a large proportion of foreign matter. The vein stuff, which was claimed by certain parties on the visit made on the 8th inst., as some sort of division would be regarded by any prospector as an important discovery, and would be followed with great confidence. Few of the prospecting shafts in Little Cottonwood district which deponent has observed have anything like as good an indication as is exhibited in the passage 30 ft. of the Emma Mine.

C. L. Stevenson testifies on the part of the plaintiff, that he is a civil and mining engineer by profession, and has been engaged in Utah continuously for the past five years, and for the past two years has been engaged in and upon the Emma Mine, and is familiar with that mine in all its parts, and says, "that the tunnels, drifts, floors, and connections are all run on and along a well defined vein in and through a silver-bearing ore in place, from said Woodman shaft and main body of ore to the extremities of the said drifts and tunnels."

Prof. Ellsworth Daggett testifies, on the part of the plaintiff, that he is a graduate of the scientific school of Yale University, and has been engaged in the business of mining and metallurgy in California, Nevada, and Utah; that he has made two examinations of the Emma Mine, the last time in February last, in company with Professor Silliman. He says:—"I fully concur in the opinion expressed by Professor Silliman in his affidavit as to the unity of the vein or deposit throughout the entire works of the Emma Company, and I am confident in the opinion that but one mineral lode or deposit was exhibited in the Emma works or in any part of their excavations."

Prof. Henry Sewell testifies, on the part of the plaintiff, that he was a mining engineer; that he was graduated at the Freiberg School of Mines in 1851, since which time he had been constantly engaged in the business of mining, examining mining properties, and exploring the mining works and developments in Germany, Austria, Hungary, Spain, Sicily, Cornwall, England, Wales, Chili, Peru, Mexico, Nevada, and Utah; that he had twice examined the Emma Mine; that it was situated in stratified limestone formation, similar to the formations of limestone found in Chili, Peru, and Mexico, in which are found some of the most celebrated mines in the world. "The Emma Mine, at the time it was examined by me, exhibited distinct and marked characteristics of a well-defined segregated strata vein, the footwall has a regular pitch into the hill about 45°, and a corner in a north-westerly direction corresponding with the footwall found in the Flagstaff Mine, which, in my opinion, development will prove to be identical with that of the Emma. So obvious to my mind was the course of the vein lying on the footwall, and pointing in a north-westerly direction, that in July, 1871, I advised the managers of the Emma Mine that the vein ran in a north-westerly direction from the ore chamber first discovered, and that by extending their drifts in that direction they would find pay ore. I have been informed that my suggestions were subsequently carried out with complete success. I am not advised as to the point where the Illinois Tunnel Company has come in contact with the Emma works, but it is certain that, if they have broken through the footwall above described they must be in the same vein originally worked by the Emma."

Silas Williams, superintendent, and William Pascoe, foreman, of the Emma Mine, testify on the part of the plaintiff, that they were present when the mine was inspected on July 8, and know the spot on the fourth floor where it was claimed there was barren rock forming a break in the ore vein; but on the 10th inst. they went to that spot, measured off nine spaces therein of 2 feet each, and from each of such spaces where the ground had not been disturbed, took a specimen of ore, which specimens were delivered to Mr. Davis, a competent assayer, to be assayed for silver. Mr. Davis testifies that he carefully assayed the same, and that his certificate of the result, attached to his affidavit, is correct. From that certificate it appears that the poorest of the samples assayed in silver 875-40 per ton, and the richest 8295-20 per ton. Williams and Pascoe, both of whom claim to have had large experience in mining, testify in running the tunnel level they took first-class ore from immediately beneath the claim claimed to be a break in the fourth floor, and shipped the same to England.

It appears from the record in this case, and counsel have referred to the fact, that the plaintiff is an English corporation, while the defendants are an American corporation and certain American citizens. The court will not do the learned counsel the injustice to suppose that they can do the court the injustice to expect that this fact will have the slightest weight in the decision of this case. Justice knows no national boundaries, whether they be oceans or imaginary lines. It is the duty of courts to enquire, not who are the parties, and whence do they come, but what are the rights and the wrongs involved in the controversy between them?

In this case the court does not find it necessary to believe that any of the witnesses have intentionally testified to what they knew to be false; but they differ widely, especially in matters of opinion, that some of them must be seriously mistaken.

Fully appreciating the magnitude of this case, the court has considered it with great care, and is constrained to reach the conclusion that that body of silver-bearing ore now in the possession of the plaintiff, and known as the Emma Mine, and that body of silver-bearing ore which the defendants have seized and are withholding from the plaintiff, are parts of one and the same vein or deposit of ore.

The question now remains what are the legal rights of the parties, it being conceded that the ground in which lies the ore held by the defendants is in the adjoining lands and outside of the surface limits designated in the plaintiff's patent. It may be pertinent to ask what were the rights of the owners of the Emma Mine or vein before a patent was issued to them? It will not be denied that they had a right to the vein, and also to its dips, angles, and variations, as part of the vein. It was their right to follow the vein in its length as far as it was rightly located; in depth to the centre of the earth; in breadth although it might enter the land adjoining. If the vein had been held by the plaintiff before the patent was issued, the lawful possessors, then these were their rights, and a patent regularly issued to them confirmed these rights. The boundaries of a patent, so far as the surface of the earth is concerned, must remain where the Government fixes them; but under the patent in question, and the Act of Congress under which it was issued (14 Statutes at Large, 202), the patentee may follow the "vein or lode, with its dips, angles, and variations, to any depth, although it may enter the lands adjoining, which shall be sold subject to this condition." It will not do, as learned counsel may enter the land adjoining, "have a weighty support."

The patent held by the plaintiff, and the Act of Congress under which it was issued, justly construed, conveyed to the patentees that body of silver-bearing ore now in dispute between the parties. The injunction must issue.

VALVE-GEAR OF STEAM-ENGINES.—The object of the improvements proposed by Mr. CASIMIR SCHEMLOTZ, of Odessa, is to obtain a very rapid movement of the slide valve, without disconnecting the valve from its eccentric. In carrying out these improvements, between the end of the slide valve rod and the eccentric bar or rod, there is interposed a third organ in the form of an extra link use of this organ or link is turning freely round its centre of motion. The result of the one part of its revolution the valve remains at rest, the valve is moved, and makes its whole stroke either inwardly or the return, as the case may be. During the motion of the eccentric for a third portion of its rotation the extra link completes its rotation and the valve again remains at rest at the other end of its stroke; then during the remaining part of the run of the eccentric, the valve is moved by the extra link remaining at rest. The valve again moves and makes its outward or opposite stroke, as the case may be. So that instead of the valve moving during the whole turn of the eccentric sh. ft. it moves only during parts of it, and the revolution of the eccentric, and with much greater speed at these times. Instead of employing an extra link or crank, as explained, other combinations may be used for the same purpose, as, for instance, a second eccentric acted upon by the end of the main eccentric bar or rod, and acting on the slide valve bar or rod. The radius of the main eccentric must be made larger by the whole length of the extra link or crank to preserve the same throw or throws of valve.

FOREIGN MINING AND METALLURGY.

The dead season, as the present period of the year is ordinarily termed, has had no influence on the firm tone of the French markets, and prices are supported as well as possible. Quotations for iron exhibit no variation; for second fusion coke-made pig as much as 77.4s. per ton is paid. A strike among the coal miners in the Pas-de-Calais has not yet fully terminated. French iron firms and companies are doing a good deal on export account. The house of Petin, Gaudet, and Co., of Rives-de-Gier, tendered recently for forged iron wheels with Bessemer steel tyres for the Hanoverian State Railways. The tender of the French house was the lowest delivered; but notwithstanding that, the contract is expected to be let to a German firm. There is no change to report in iron quotations at Paris. An advance is anticipated, but it has not yet actually taken place. The imports of iron minerals into France in the first five months of this year amounted to 214,000 tons. The imports appear to be steadily rising to their old level. The imports of iron minerals from the Zollverein are still not, however, what they were. The committee of French forgemasters has just held a quarterly meeting; one of the questions discussed was the scale to be adopted in regard to the classification of irons, and the committee decided to maintain the status quo.

A quotation of 10l. 16s. per ton for No. 1 merchant iron is now generally established at Belgium; all the works have carried their tariff to this rate, and some of them are even seeking to exceed it. Other prices have not varied, and the general establishment of a quotation of 10l. 16s. per ton represents rather the tendency upwards than the rise itself, as at the close of a former week this price was almost general. Plates maintain the lead in the upward movement without its being practicable to give a fixed quotation, seeing that prices vary from 8s. to 24s. per ton from one establishment to another for the same number. Nails are in demand in Belgium on English account. There has been very little passing in rails; nevertheless, some foreign customers, and especially Germans, would purchase large quantities if they could only obtain them. But no rolling-mill proprietors will just now undertake fresh orders, at any rate at the current rates of the day; and the Germans will, probably, be obliged to make themselves such rails as they may require. The approach of the winter season renders the demand for general railway matériel more active in Belgium, and several contracts are expected to be shortly let. The extraordinary results of the past exercise have permitted the proprietors of many workshops to increase and improve their stock of tools. Three great Belgian houses have provided tools for the production of forged wagon-wheels. A re-adjudication has just taken place for 1020 tons of Bessemer or Martin steel rails in two lots of 510 tons each. The Slesian Company tendered for one lot at 15l. 8s. per ton, and the Cockerill (Seraing) Company for one lot at 15l. 6s. per ton.

The German railway administrations are about to introduce a system of allowing firms to hire trucks without regard to the loads which they may put in them. A similar policy is said to be "under consideration" in Belgium.

Considerable transactions have taken place in copper. Thus purchases have been made upon the English markets by French houses, which are laying in large supplies in anticipation of the promulgation of a new law imposing new taxes on the importation of copper into France. At Paris, Chilian in bars delivered at Havre has been quoted at 109l.; ditto in ingots, 113l.; English tough cake, 109l.; and Corocoro minerals, pure standard, 110l. per ton. At Marseilles rolled red copper in sheets has been quoted at 112l. per ton. As Rotterdam, Drontheim has been priced at 50 fls. to 52 fls.; and Russian Crown at 51 fls. At Paris, Banca tin delivered at Havre or at Paris has realised 176l.; Straits delivered at Havre or Paris, 168l.; and English delivered at Havre or at Rouen, 164l. per ton. At Rotterdam, Banca has realised 96 fls., and Billiton, 94 fls. At Paris French lead has realised 20l. 16s.; Spanish delivered at Havre, 20l. 5s.; and English delivered at Havre, 20l. per ton. At Marseilles lead in saumons, first fusion, is quoted at 19l. 6s.; ditto, second fusion, 19l.; ditto in shot, 21l. 12s.; rolled and in pipes, 21l. 4s. per ton. At Rotterdam, Stolberg is quoted at 123 fls.; Spanish at 123 fls.; and German of various marks at 124 fls. At Paris, Silesian zinc delivered at Havre has realised 24l.; other good marks delivered at Havre, 24l.; and ditto delivered at Paris, 24l. per ton. At Marseilles rolled Vieille-Montagne zinc has brought 32l. per ton, with a discount of 3 per cent. At Amsterdam, Silesian has brought 13 fls. to 13½ fls.

The intelligence received as to the French coal trade is not altogether good. There has been a strike in the basins of the Nord and the Pas-de-Calais; one has also commenced in the basins of the Loire. Market prices are at present to a great extent nominal. We must wait for the re-opening of navigations before quotations will be re-established upon a solid basis. Although prices have not varied at present, a further advance is anticipated. As regards the Belgian coal trade, it may be observed that although the canals are idle, and although there is a want of working miners, the markets are as animated as they well can be; prices are maintained in consequence with unshaken firmness, and a further advance is anticipated. Strike difficulties are considered to be at an end for a time in the Coudant de Mons, and in Belgium generally. Many transactions in coal have been offered, but thus far there have been few acceptances, as producers seem to wish to be assured as to the turn which events may take at the commencement of winter before they conclude heavy contracts. Coalowners begin to complain in Belgium of the high rates of wages prevailing in that country. During the past year wages have risen about 20 to 25 per cent.; and, upon the whole, notwithstanding that prices have also advanced, the position of Belgian coalowners is probably less favourable now than it was a year since. The railways manage at present to get through their coal traffic pretty well, but there are still apprehensions as to a scarcity of trucks. The Belle Vue Colliery Company has been paying this month a first dividend for 1872, at the rate of 1l. per share.

FOREIGN MINES.

EMMA.—Telegram received on Tuesday from Salt Lake City:—"Forwarded 250 tons first-class ore this week to New York; raised 80 tons first-class ore this week; raised second-class ore this week, nothing; 130 tons first-class ore at railway depot; 10 tons first-class ore raised at mine."

CLIFTON.—Telegram from Dowlen, Central City, Colorado: "Lode struck in Clifton tunnel 3 ft. wide; ore splendid."

PACIFIC.—Telegram from the superintendent, Aug. 5: "Shipped to railroad to-day by our team, 8 tons; estimated value, \$4000. Will ship again as soon as teams return. Mine working well."

EYCHQUEUR.—Extracts from the *Alpine Chronicle*, of June 29:—"Plans are being prepared for the enlargement and re-modelling of this mill. A turbine is to be added, which, in connection with the engine, will furnish ample power for both quartz and saw-mill. Hoisting Works: The hoisting works for the Eychqueur and the L. X. L. Mines will arrive per rail from New York shortly, when extensive operations will be inaugurated.—Getting Ready: The saw-mill of the Eychqueur Mining Company is being out in order for the cutting of 500,000 ft. of lumber for the Eychqueur, L. X. L., and Acazia Mines."

I. X. L.—In about two weeks hoisting works for this mine will arrive from New York. The working of this mine is to be upon the plan adopted by the board of directors in London. The reputation of this mine as to silver and gold bearing quartz was well established by a former company, that lacked both means and judgment to work it successfully, and the good reputation then earned for it warrants a vigorous prosecution towards its development. During the absence of Manager Chalmers in England, last winter, a fine body of ore was struck in the face of the old upper tunnel, both above and below, but this will not be touched at present, until the company's mill is erected. As soon as the hoisting works are in position sinking will commence, and a mill, with its surroundings, will be erected, second to none on this coast in number of stamps and appointments.

CAMP FLOYD.—E. B. Wilder, July 16: Since my last report I have to communicate but little change in our operations at the mine, with the exception of Incline No. 1, and Last Chance cut No. 1, which have improved very much. The former is now down 122 feet; our assays for the past few days at this depth range from \$40 to \$127 silver per ton. In the latter, Last Chance cut No. 1, we have been stopping some very fine ore, in which the horn silver appears thickly interspersed throughout. Drift from shaft No. 3 looks well and promising for ore, but it is impossible to determine when we shall strike the vein, owing to the great changes that are continually occurring in its pitch, at times nearly vertical, and then horizontal. We are endeavouring to remove (as rapidly as possible) by means of our tramroad, which works finely, the ore in our way ready for mill, in order that we can again extract from the mine in large quantity, as, irrespective of the ore ready, with that in stopes, Incline No. 1 presents a large body. The furnace was started on the 14th inst., as it was not deemed advisable to do so at an earlier period, preferring to wait until the mason work was dry. We have now some 1700 lbs. of amalgam ready for retorting, as soon as the retorts and smelting furnace are ready; this amalgam is of a high standard, and worth in its present condition about \$3 per lb., it being the proceeds of five days run from 120 tons pulp of our ordinary ore. As soon as the feeder to the furnace is remedied, and new con-

veying lute in, there is nothing to prevent our going a-head and turning out bullion rapidly. The mill works as well as could be desired, and furnace also. In my report for July 31 a statement will be forwarded as to cost of running mill and salt used, and number of cords of wood consumed by engine and furnace daily, which, with labour, will give the cost per ton of reduction.

ALAMILLOS.—July 31: The lode in the 60, driving west of San Rafael's shaft, is large, and spotted with lead. We have resumed the driving of the 50 west of San Francisco shaft; the lode is of a promising appearance, yielding ½ ton of ore per fathom. The 75, driving east of La Magdalena shaft, has opened a good ore ground in the present month, but is now much altered, yielding ½ ton of ore per fathom. The lode in the 85, driving east of Taylor's engine-shaft, is large, with a good stone of ore in the upper part of the cut, worth ½ ton per present quite unproductive. The lode in the 50, driving west of San Jago shaft, has fallen off in value in the past week. We expect to hole the 40, driving east of San Alejandro's winze, to the last named level in the coming month. The 40, driving east of San Victor's shaft, is large, and yielding good lumps of ore, worth 1 ton per fathom. The end is being driven at a good pace. In the 50, driving east of San Victor's shaft, the lode is wide and strong, with large lumps of ore. The lode in the 30, driving west of San Victor's cross-cut, is quite unproductive at present, in the early part of the month, but is poor at present. The lode in the 40, driving west of San Victor's cross-cut, is a fine-looking one, consisting chiefly of carbonate spar and lead ore, yielding 2 tons of the latter per fathom. The lode in the 40, driving west of San Victor's cross-cut (middle lode), is very similar to the one last mentioned, and running parallel with it, also yielding 2 tons of ore per fathom. In the 20, driving east of Addis's shaft, the ground is easy for driving, but the lode does not contain lead enough to value. In the 20, driving east of Addis's cross-cut, the lode has greatly diminished both in size and value in the past of two or two, now worth 1 ton per fathom. The lode in the 20, driving west of Addis's cross-cut, contains stones of ore, and we expect a further improvement shortly. The lode in the 50, driving east of Crosby's shaft, is unproductive. In the 50, driving east of Crosby's cross-cut, the lode is open, and easy for driving. The 50, driving west of Crosby's cross-cut, is passing through a bar of ground of little value, yielding ½ ton of ore per fathom. The men are getting on well with the sinking of Judd's shaft below the 40. The sinking of Air's shaft below surface is impeded by an influx of water. Gabriel's winze, sinking below the 30, will be holed to the 40 very shortly. In Garcia's winze, sinking below the 60, the lode has again improved, yielding 1½ ton of ore per fathom. The lode in Marto's winze, sinking below the 50, is getting smaller, worth ¾ ton per fathom, and the ground hard for sinking. The tribute department yielded moderately well in the present month, and the stopes are now without any alteration worthy of notice. The works we estimate the raisings for August (five weeks) at 275 tons.

LINARES.—July 31: Pozo Ancho Mine: The lode in the 85, driving west of Crosby's shaft, is of an open and promising appearance, and yields large lumps of rich ore, worth ¾ ton per fathom. The lode in the 75, driving west of Crosby's shaft, is small, and the ground hard and wet for driving. The 75, driving west of San Francisco shaft, the lode, although small, is opening paying ground, worth 1 ton of ore per fathom. The lode in the 75, driving east of San Francisco shaft, is small, compact, and regular, yielding ½ ton of ore per fathom. In the 65, driving west of San Francisco shaft, the ground is easier for driving, and the lode improving in appearance. The 55, driving west of San Francisco shaft, has opened good ore ground in the past month, yielding ½ ton per fathom; the lode has failed in the last day or two. We have resumed the driving of the 55 east of San Francisco shaft, in which the lode is small at present. The driving of the San Francisco shaft, continues quite unproductive.—Winzes: The driving of the 55, driving east of Addis's shaft, is sinking below the 55, and at present is without lead. In No. 182 winze, sinking below the 35, the lode is small and unproductive. The lode in No. 183 winze, sinking below the 35, contains stones of ore, but not sufficient to value. The stopes yielded very well in the past month, and continue to produce a good quantity of ore, but several of the best of them are getting thin. The operations at surface are kept on very regularly, and the machinery in good working order. The raisings for August are estimated at 200 tons.—Los Quinientos Mine: The 55, driving west of Taylor's engine-shaft, being drilled, the driving will be resumed at once; the lode is small and compact, yielding ½ ton of ore per fathom. The lode in the 55, driving east of Taylor's engine-shaft, is large, with a few spots of lead. In the 45, driving east of Addis's shaft, the lode has improved, and has a kindly appearance, yielding ¾ ton of ore per fathom. The lode in the 45, driving west of San Carlos shaft, is of a good size, and yields fine stones of ore, worth ½ ton per fathom. In the 45, driving east of San Carlos shaft, there is a good branch of ore in the upper part of the cut, worth ½ ton per fathom. The lode in the 32, east of Judd's shaft, is unproductive. Shafts and Winzes: Old works continue in Judd's shaft sinking, below the 32. The ground at Garcia's shaft, sinking below the 32, is very hard for sinking. The lode in Carrasco's winze, sinking below the 32, is wide, with stones of ore, but not enough to value. The new 53-in. engine was set to work on the 27th inst., and goes remarkably well. The 55 is already drained, and we expect to get the water out of the bottom level in a few days. It is a strong and thoroughly well made engine, with the bearings beautifully fitted, and the erection is as good as the construction, so that the mine is provided with very powerful and economical pumping machinery.

FORTUNA.—July 31: Canada Inco: The lode in the 110, driving west of Henty's shaft, is still split into branches, and the ground easier for driving; yielding ½ ton per fathom. The lode in the 100, driving west of Judd's shaft, is in a regular and well-defined lode, yielding 1½ ton of ore per fathom. In the 100, driving east of Henty's cross-cut, the lode is composed of hard spar, spotted with lead ore. The lode in the 60, driving west of San Pedro shaft, is large and strong, producing good stones of lead, and worth ½ ton per fathom. The 60, driving east of San Pedro shaft, continues to open moderately productive ore ground, worth 1 ton per fathom. The ground in the 90, driving east of Addis's shaft, is disordered, and the lode poor at present. The lode in the 50, driving west of Lowndes's shaft, is large, but of no value, and the ground very hard for driving. The lode in the 80, driving east of Caro's shaft, is kindly, and we expect an improvement shortly.—Shafts and Winzes: In Lowndes's shaft, sinking below the 80, the lode is large, strong, and kindly, producing fine lumps of lead ore, and yielding 1 ton of ore per fathom.—Los Salidos Mine: The lode in the 110, driving west of Buenos Amigos shaft, is larger, and of more value than it was, producing 1 ton of ore per fathom. In the 100, driving west of San Carlos shaft, the lode is still small and compact, and yielding ¾ ton of ore per fathom. The 90, driving west of San Carlos shaft, continues poor, and the ground is hard for driving. The lode in the 80, driving west of Buenos Amigos shaft, does not contain as yet sufficient lead to value. The lode in the 110, driving east of Morris's engine-shaft, is large and strong, but at present poor. The 110, driving east of San Pablo shaft, continues to open splendid ore ground, producing 3 tons of ore per fathom. In making the 25, driving west of Palgrave's engine-shaft, good we find good stones of lead in the old men's attic. The lode in the 35, driving west of Palgrave's engine-shaft, is regular and compact, opening out good paying ground, and yielding 2 tons of ore per fathom. In the 35, driving east of Palgrave's engine-shaft, more small branches have been met with since last report, but of little value, and the ground is hard for driving. The lode in Morris's engine-shaft, sinking below the 110, has declined rather in value since last report, now yielding ½ ton of ore per fathom. The men are getting on well with Palgrave's engine-shaft, sinking below the 35; it produces 1 ton of ore per fathom. We hope to hole Lorenzo's winze, sinking below the 90, to the 100 shortly; it now yields ¾ ton of ore per fathom. Mariano's winze, sinking below the 100, is going down in a solid and compact lode, producing 2½ tons of ore per fathom.

[For remainder of Foreign Mines see to-day's Journal.]

MINING IN NEW SOUTH WALES.

Sydney, June 15.—By day and by night, waking or sleeping, Mining is the great theme with the population. Not that the excitement is so great as it was. Because the last crushing from one of the rich claims of Hawkins' Hill has fallen far short of what was expected, a panic has seized the shareholders. Buyers, consequently, are very few, and sellers in any quantity. A good crushing leads to much excess in the contrary direction. The rise or fall is among the simple speculators, who are spawned in thousands at such times as these, the pawn shops being filled with furniture to make shareholders, who only wait to sell out on the slightest rise in the market. The opportunity has been taken to play on the credulity of the public, of course, and share by the thousands has been issued representing nothing but a few acres of land, and upon which the scrub still grows, and will continue to grow, for they are as destitute of gold as the gold-finding brain of man. But while disappointment awaits a great number of people who merely speculate in shares, those who judiciously invest for the purpose of developing the auriferous resources of the country will have no reason to regret their adventure. The state of our mining industry, so far as it is in the hands of companies, is represented by the following:—Gold.—Number of mines, 321; nominal capital, 2,167,618l.; subscribed capital, 1,059,502l.—Copper.—Number of mines, 18; nominal capital, 631,000l.; subscribed capital, 460,240l.—Tin.—Number of mines, 21; nominal capital, 653,000l.; subscribed capital, 279,000l.

With respect to the private working, I can say nothing certainly; but they are numerous. So far as the gold mines are concerned, it will be two or three years before many of them will yield returns. The return for the past five months is 153,565 ozs., as against 91,352 ozs. for the corresponding period of 1871. The tin companies promise a more rapid reward. One formed a few months since has already returned a first dividend of 5 per cent. on capital. According to a reliable authority, there is a large amount of stream tin in the alluvial flats bordering the water-courses that run down from the tin producing ranges, and from this loose ground, which is easily worked, tin ore can easily be washed out, and as this ore averages sometimes as high as nearly 80 per cent., it is easily marketable and pays well for shipment to England. The alluvial deposits of tin, like the alluvial deposits of gold, may be washed up in a few years, but when that is done we have the assurance of the Rev. W. B. Clarke, from whom no man is better acquainted with the mineral sources of these colonies, that large areas of granite abounding in tin await the mining capitalist and the engineer. In his opinion, New South Wales and Queensland will henceforth take rank as tin-producing countries, and that their production will have a very perceptible effect on the markets of the world. In his opening address, delivered during the month to the Royal Society, this gentleman stated, or rather reiterated, for his conclusions were announced long since, that the three great geological divisions of our colony are replete with mineral treasures that are practically inexhaustible; that no sooner are we off the carboniferous areas, rich in coal and its associated minerals, than we are in a region in which are tracts where gold, copper, and lead abound; and passing from the sedimentary to the plutonic rocks, we can discover granites which, though ever barren externally, are within frequently charged with the valuable ore of tin; that from north to south, and from the coast to the 141st meridian, we know that gold, copper, tin, and in many places lead, and other minerals of less importance, are found in abundance. British capital, therefore, need not be found running into questionable European channels while these colonial fields await its fertilising influence. Skill and capital are all we want, and both are to be found in the Mother Country.

GEOLOGY OF LILLESHELL AND NEIGHBOURHOOD.—Some highly interesting observations upon the subject were made at the recent meeting of the North Staffordshire Field Naturalists' Club by Mr. Wm. Molyneux, F.G.S. A vast amount of instructive information was contained in the address, which was listened to throughout with marked attention.

BICKFORD'S PATENT

FOR CONVERTING CHARGE IN SAFETY FUSE, FIRE TO THE BLASTING ROCKS, &c.

Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at the "INTERNATIONAL EXHIBITION" of 1855; at the "IMPERIAL EXHIBITION," held in Paris, in 1855; at the "INTERNATIONAL EXHIBITION," in Dublin, 1855; at the "UNIVERSAL EXPOSITION," in Paris, 1867; and at the "GREAT INDUSTRIAL EXHIBITION," at Altona, in 1869.

BICKFORD, SMITH, AND CO., of TUCKINGMILL, CORNWALL, MANUFACTURERS OF PATENT SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—
EVERY COIL OF FUSE MANUFACTURED BY THEM HAS TWO SEPARATE THREADS PASSING THROUGH THE COLUMN OF GUN-POWDER, AND BICKFORD, SMITH, AND CO. CLAIM TWO SUCH SEPARATE THREADS AS THEIR TRADE MARK.

CAPTAIN TREGAY'S**IMPROVED PATENT STAMP COFFER,**

FOR STAMPING GOLD QUARTZ, TIN, AND OTHER ORES.
The gateway is extended, discharge doubly increased, and power economised.
May be inspected in full work, on application to Captain TREGAY, Redruth, Cornwall, who is PREPARED TO TREAT FOR GRANTING LICENSES for its use, or to SUPPLY the MACHINES.

For Excellence

and Practical Success



Represented by

Model exhibited by this Firm.

HARVEY AND CO.,
ENGINEERS AND GENERAL MERCHANTS,
HAYLE, CORNWALL,

HAYLE FOUNDRY WHARF, NINE ELMS, LONDON,
AND 115, GRESHAM HOUSE, E.C.

MANUFACTURERS OF
PUMPING and other LAND ENGINES and MARINE STEAM ENGINES
the largest kind in use, SUGAR MACHINERY, MILLWORK, MINING
MACHINERY, and MACHINERY IN GENERAL.
SHIPBUILDERS IN WOOD AND IRON.

SECONDHAND MINING MACHINERY FOR SALE,
In First-Rate Condition, at Moderate Prices.

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES
STEAM CAPSTANS; and CRUSHERS of various sizes. BOILERS, PIT-
WORK of all descriptions, and all kinds of MATERIALS required for
MINING PURPOSES.

THE PATENT PNEUMATIC STAMPS

May be SEEN AT WORK at HAYLE FOUNDRY WHARF, NINE ELMS,
by previous application at either of the above addresses.

JOHN AND EDWIN WRIGHT,

PATENTERS.
(ESTABLISHED 1770.)
MANUFACTURERS OF EVERY DESCRIPTION OF
IMPROVED

PATENT FLAT AND ROUND WIRE ROPES

from the very best quality of charcoal iron and steel wire.
PATENT FLAT AND ROUND HEMP ROPES,
SHIPS RIGGING, SIGNAL AND FENCING STRAND, LIGHTNING CON-
DUCTORS, STEAM PLOUGH ROPES (made from Wedder and Horsfall's
patent steel wire), HEMP, FLAX, ENGINE YARN, COTTON WASTE,
TARPAULING, OIL SHEETS, BRATTICE CLOTHS, &c.

UNIVERSE WORKS, MILLWALL, POPLAR, LONDON.

UNIVERSE WORKS, GARRISON STREET, BIRMINGHAM.

CITY OFFICE, No. 8, LEADENHALL STREET, LONDON, E.C.

PROTECTED BY ROYAL LETTERS PATENT.

BARKER'S IMPROVED FUEL

(FROM COAL DUST),
SUITABLE FOR ALL PURPOSES FOR WHICH COAL IS USED.

This fuel, made from dust coal, gives in use results superior to the best coal; it is thoroughly water proof, stacks without liability to spontaneous combustion, loss, or deterioration on board ship, or in any climate, and in 30 per cent. less space than coal.

An immense saving in effected by its use on sea-going steamers, owing to its high evaporative power, requiring one-third less stowage room, and avoiding all risk of spontaneous combustion. It burns with little smoke, forming itself into coke; it is very durable, the combustion is perfect, and it will not fall or disintegrate in great heat before a blast or strong draught, nor does it produce clinker.

It will bear rough usage and handling without breakage.
As regards the manufacture, it is easily and cheaply made; the machinery made is simple, effective, and comparatively inexpensive.
No heavy pressure is required, or exposure to heat after moulding, to dry or coke (as is usual); and after mixing, the blocks could, if desired, be made up by hand labour; but for large production, self-acting machinery is recommended; and when moulded, the fuel is at once ready for use or transit.

Works are in operation in London, and can be viewed on application.
Intending licensees can send their coal and have it made up into fuel in their own presence, and have it returned to them for trial.

Samples on a large scale suitable for every purpose supplied for trial.
The proprietors of the patents are prepared to grant licenses, and would, if desired, undertake contracts to provide machinery, erect works, and put the same into satisfactory operation, on any required scale of manufacture.
Application to be addressed to the patentees—

Mr. DAVID BARKER, Oldbury House, Northfleet, London; or
Mr. THOS. D. CLARE, 13, St. Mary's Row, Birmingham.

**THE RAILWAY SPRING COMPANY,**

MILLSANDS, SHEFFIELD,
Having purchased from the Trustee of the late Firm of W. Charles and Co. the extensive works, with the valuable and improved machinery, are prepared to execute orders for every description of
RAILWAY SPRINGS.



By a special method of preparation, this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

I. AND T. HEPBURN AND SONS,
TANNERS AND CURRIERS, LEATHER MILLBAND AND HOSE PIPE
MANUFACTURERS,

LONG LANE, SOUTHWARK, LONDON.

Prize Medals, 1851, 1855, 1862, for

MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

THE IRON AND COAL TRADES' REVIEW:

ROYAL EXCHANGE, MIDDLESBOROUGH.
The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron and coal districts. It is, therefore, one of the leading organs for advertising every description of Iron Manufacturers' Machinery, New Inventions, and all matters relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
Offices of the Review: Middlesborough-on-Tees (Royal Exchange); London, 11 and 12, Red Lion-court, Fleet-street; Newcastle-on-Tyne (50, Grey-street).

AWARDED TWENTY GOLD AND SILVER FIRST-CLASS PRIZE MEDALS.

IMMENSE SAVING OF LABOUR

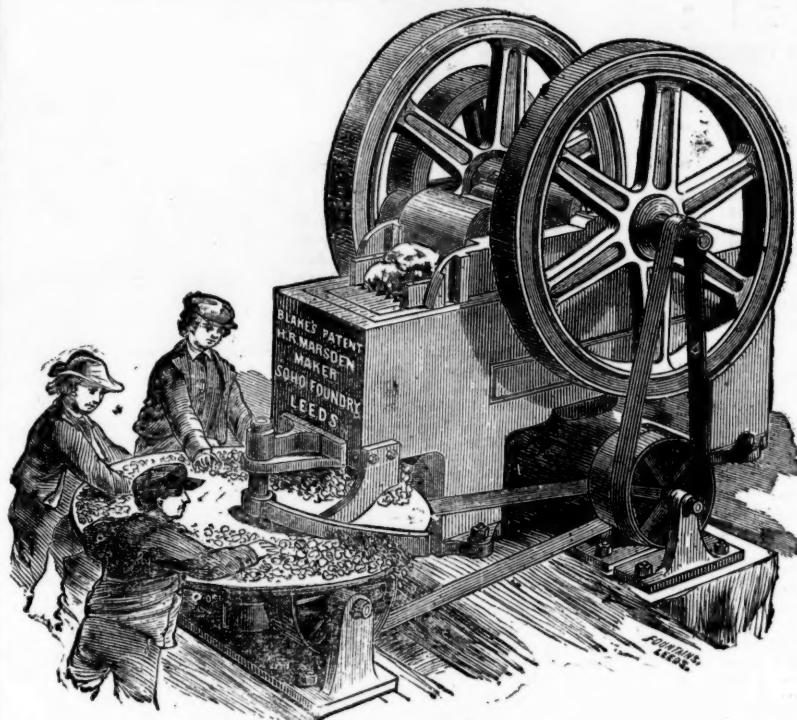
TO MINERS, IRONMASTERS, MANUFACTURING CHEMISTS, RAILWAY COMPANIES, EMERY AND FLINT GRINDERS, MCADAM ROAD MAKERS, &c., &c.

BLAKE'S PATENT STONE BREAKER, OR ORE-CRUSHING MACHINE,

FOR REDUCING TO SMALL FRAGMENTS ROCKS, ORES, AND MINERALS OF EVERY KIND.

This is the only machine that has proved a success. This machine was shown in full operation at the Royal Agricultural Society's Show at Manchester, and at the Highland Agricultural Society's Show at Edinburgh, where it broke 1½ ton of the hardest trap or whinstone in eight minutes, and was AWARDED TWO FIRST-CLASS SILVER MEDALS. It has also just received a SPECIAL GOLD MEDAL at Santiago, Chili.

It is rapidly making its way to all parts of the globe, being now in profitable use in California, Washoe, Lake Superior, Australia, Cuba, Chili, Brazil, and throughout the United States and England. Read extracts of testimonials:—



For illustrated catalogue, circulars, and testimonials, apply to—

H. R. MARSDEN, SOHO FOUNDRY, MEADOW LANE, LEEDS,

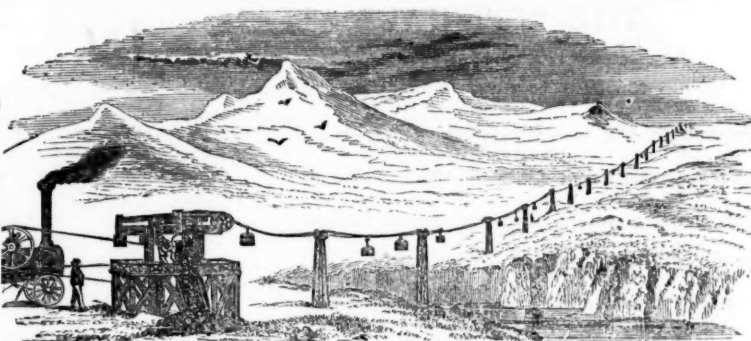
ONLY MAKER IN THE UNITED KINGDOM.

WIRE TRAMWAYS**COST**

(exclusive of power and rolling-stock)

From £250 to £900

per mile,



For quantities

ranging from

10,000 to 100,000

tons per annum

And are at present successfully employed in lengths from a quarter of a mile to fourteen miles in transport of soil, ironstone, fire-clay, coke, general mining produce, beetroot, sugar-cane, &c. They are working in most difficult and mountainous districts, where any other means of transport is impossible, as well as through ordinary country.

ABOUT SEVENTY LINES HAVE ALREADY BEEN CONSTRUCTED.

THE WIRE TRAMWAY COMPANY (LIMITED)

Are PREPARED to SURVEY and ESTIMATE for LINES and EXECUTE CONTRACTS at HOME and ABROAD. They have engineers employed in constructing these lines in England, Holland, Prussia, Austria, Russia, Italy, Spain, United States, Peru, Chili, River Plate, India, Bolivia, West Indies, and Egypt. The system has been adopted by the English and Anglo-Indian Governments, the Spanish and Prussian Governments, and for many of the first mines and ironworks at home and abroad.

WIRE TRAMWAY COMPANY (Limited), 21, Gresham-street, E.C.

ROBEY AND COMPANY, LIMITED, ENGINEERS, LINCOLN.

PATENT PORTABLE

HAULING AND WINDING ENGINE

WITH

PATENT DRUM WINDLASSES,

FOR MINING PURPOSES.

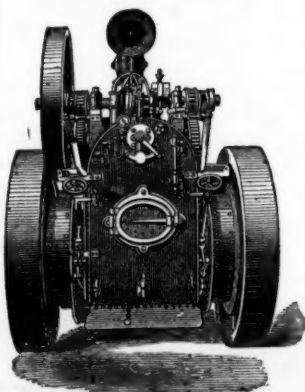
This Engine is specially commended to Mining Engineers and others, as by its adoption—Haulage along inclined drifts is easily and cheaply effected;

The expense of sinking new shafts is greatly reduced, neither foundations nor engine-house being required;

It is available not only for winding, but for pumping, sawing, &c.—a great desideratum at a large colliery;

It can be very quickly removed (being self-propelling), and fixed in any desired position.

Prices and full particulars on application as above, and also references to view the engine in successful work near Derby, Carnarvon, Haverfordwest, Darlington, and other places.



TANGYE BROTHERS AND HOLMAN,

10, LAURENCE POUNTNEY LANE, LONDON,

CORNWALL WORKS (TANGYE BROTHERS), BIRMINGHAM,

SOLE MAKERS OF

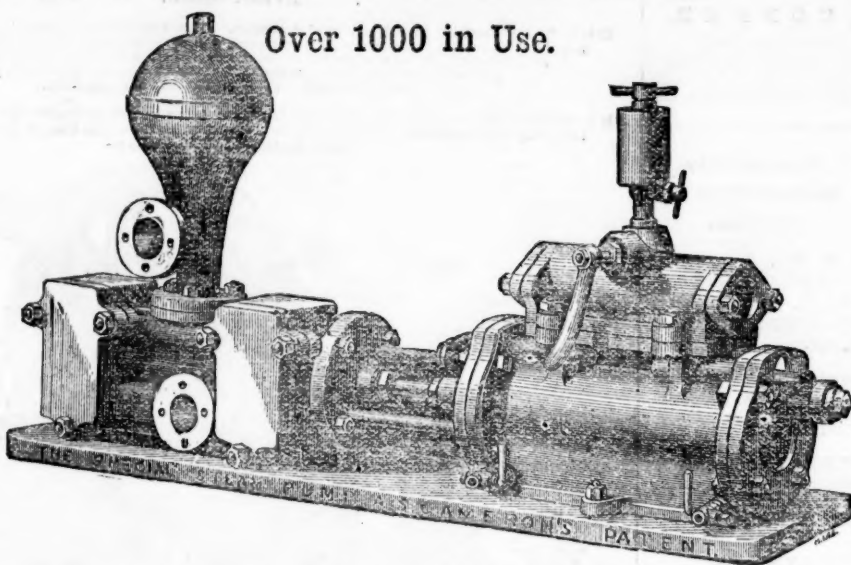
THE "SPECIAL" STEAM PUMPS.

IN USE AT THE FOLLOWING QUARRIES:—

Carnarvon and Bangor Slate Co. ...	5 Pumps.
Kellow, J. E., North Wales Slate Co. ...	1 "
New Zealand Quartz Crushing and Gold Mining Company ...	1 "
Scott, R. W., Dungannon, Ireland ...	1 "
Foster, J. S., Hebburn Quarries ...	1 "

IN USE AT THE FOLLOWING CHEMICAL WORKS:—

Alum and Ammonia Co., Bow Common ...	2 Pumps.
Barnes, W. O., Hackney Wick ...	2 "
Burt, Boulton, and Hayward, Tar Works, Millwall ...	1 "
Cory and Co., Manor-street, Old Kent-road ...	2 "
Whiffen, Thomas, Battersea ...	1 "
Jones, W., and Co., Middlesborough ...	4 "
Jarrow Chemical Co., South Shields ...	1 "
Richardson, J. G. and N. H., Jarrow-on-Tyne ...	1 "
Read, Holliday, & Sons, Huddersfield ...	1 "
Sheldon, Nixon, and Co., West Jarrow ...	2 "
Tennant, C., and Co., near Newcastle ...	7 "
Webb, H., & Co. (Manure), Worcester ...	1 "
Union Chemical Company, Stratford ...	1 "



Over 1000 in Use.

NOTE,

Requires NO Shafting, Gearing, Riggers, or Belts.

All Double-Acting:

Works at any Speed, and any Pressure of Steam.

Will Force to any Height.

Delivers a constant stream.

Can be placed any distance away from a Boiler.

Occupies little space.

Simple, Durable, Economical.

IN USE AT THE FOLLOWING COLLIERIES:—

Adelaide Colliery, Bishop Auckland ...	3 Pumps.	North Bitchburn Colliery, Darlington ...	2 Pumps.	Stott, James, and Co., Burslem ...	1 Pump.
Acomb Colliery, Hexham ...	1 "	Newton Cap Colliery, Darlington ...	1 "	Seaton Delaval Coal Company, near Newcastle ...	1 "
Blackfell Colliery, Gateshead ...	1 "	Normanby Mines ...	1 "	Thornley Colliery, Ferryhill ...	1 "
Black Boy Colliery, Gateshead ...	1 "	Oakenshaw Colliery ...	1 "	Thompson, John, Gateshead ...	2 "
Castle Eden Colliery ...	2 "	Pease's West Colliery ...	2 "	Trimdon Grange Colliery ...	1 "
Crofton, J. Ct., near Ferryhill ...	1 "	Pease, J. and J. W., near Crook ...	5 "	Tudhoe Colliery ...	4 "
Carr, W. C., Newcastle ...	4 "	Pease, J. and J., Brandon Colliery ...	1 "	Vobster and Mells Colliery ...	2 "
Etherley Colliery ...	1 "	Pegswood Colliery, near Morpeth ...	2 "	Widdrington Colliery, Morpeth ...	2 "
Gidlow, T., Wigan ...	3 "	Pelton Fell Colliery ...	1 "	Whitworth and Spennymoor Colliery ...	3 "
Haswell, Shotton, and Easington Coal Co. ...	2 "	Railey Fell Colliery, Darlington ...	1 "	Westerton Colliery, Bishop Auckland ...	1 "
Lochgelly Iron and Coal Company ...	1 "	Right Hon. Earl Durham, Fence Houses ...	1 "	Wardley Colliery, Gateshead ...	1 "
Leather, J. T., near Leeds ...	2 "	Skelton Mines ...	1 "	Westminster Brymbo Coal Company ...	2 "
Lumley Colliery, Fence Houses ...	1 "	South Benwell Colliery ...	4 "	Weardale Coal and Iron Company ...	5 "
Monkwearmouth Colliery, Sunderland ...	1 "	St. Helens (Tindale) Colliery ...	1 "		

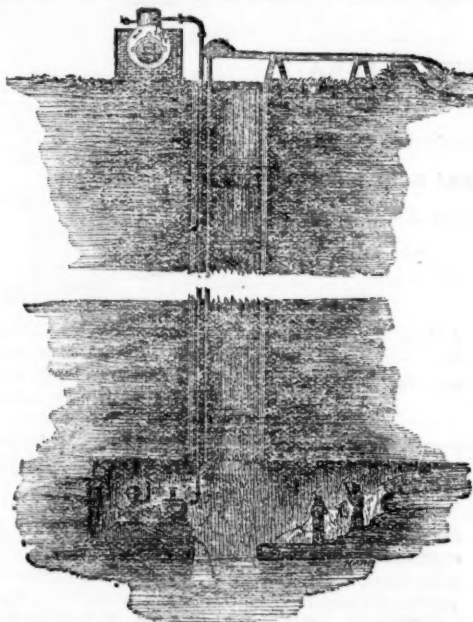
IRONWORKS AND ROLLING MILLS:—

Bede Metal Company, Jarrow ...	11 Pumps.	Gilkes, Wilson, Pease, and Co., Middlesboro' ...	2 Pumps.	Whitwell and Co., Stockton ...	3 Pumps.
Bagnall, C. and T., Grosmont Ironworks ...	2 "	Lloyd and Co., Middlesborough ...	1 "	Whessoe Ironworks, Darlington ...	1 "
Consett Ironworks ...	2 "	Solway Hematite Iron Company, Maryport ...	1 "	West Cumberland Hematite Iron Company ...	1 "
Castleford Foundry Company, Normanton ...	1 "	Vaughan, Thomas, Middlesborough ...	2 "	Westbury Iron Company ...	1 "
Ellen Rolling Mills, Maryport ...	1 "	The Shotts Iron Company, Edinburgh ...	1 "		

THE "SPECIAL" STEAM PUMP AS APPLIED FOR DRAINING MINES.

The arrangement in the accompanying illustration shows an economical method of draining mines without the expense of erecting surface-engines, fixing pump-rods, or other gearing. A boiler adjacent to the pit's mouth is all that is necessary on the surface; from thence steam may readily be taken down, by means of a felted steam-pipe, to connect the pump with the boiler. The pump may be placed in any situation that may be convenient for working it, and connecting the steam, suction, and delivery pipes.

These engines can be fixed and set to work in a



comparatively short time, and also at a very small outlay. They are used in large mines as auxiliary engines, and will be found invaluable adjuncts in all mining operations.

To estimate the quantity of water to be raised by any given size of pump refer to the tabulated list below. It is recommended to use long-stroke pumps where the height exceeds 100 ft., so that the largest result may be obtained with a minimum wear and tear of the pump pistons and valves. The pumps are provided with doors for ready access to all working parts.

PRICES OF THE "SPECIAL" STEAM PUMPS.

Diameter of Steam Cylinder	2½	3	4	4	6	6	6	7	7	7	8	8	8	8	10	10	12	12	14	16	26
Diameter of Water Cylinder	1½	1½	2	4	3	4	6	5	6	7	4	6	7	8	6	7	8	10	8	7	6½
Length of Stroke	6	9	9	12	12	12	12	12	12	12	12	12	12	18	12	12	18	24	48	24	72
Strokes per minute	100	100	70	50	50	50	50	50	50	50	50	50	50	35	50	50	35	—	—	—	—
Gallons per hour	310	680	815	3250	1830	3250	7330	5070	7330	9750	3250	7330	9750	13,000	7330	9750	13,000	—	—	—	—
PRICE	£10	£15	£20	£35	£30	£40	£47 10	£50	£52 10	£57 10	£50	£55	£65	£85	£70	£80	£100	—	—	—	—

IF BRASS LINED, OR SOLID BRASS OR GUN-METAL WATER CYLINDERS, WITH COPPER AIR VESSELS, EXTRA, ACCORDING TO SIZE.

Any Combination can be made between the Steam and Water Cylinders, provided the Lengths of Stroke are the same, thus—8 in. Steam and 3 in. Water, or 10 in. Steam and 3 in. Water, adapted to height of lift and pressure of steam, and so on.

TANGYE BROTHERS & HOLMAN, 10, Laurence Pountney-lane, London, E.C.

SUPPLEMENT.

THE MINING JOURNAL,

Railway and Commercial Gazette.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

EXTRACTS FROM DICKER'S "AUSTRALIAN & LONDON GAZETTE."

LONDON, SATURDAY, AUGUST 10, 1872.

GOLD AND THE GOLD-FIELDS.

THE news from the gold-fields during the past month has been of a very satisfactory kind, more especially as regards Ballarat and Sandhurst. In the former city a company well known to investors in colonial mines—the Winter's Freehold—who have worked energetically for years past at great cost under considerable disadvantages, and the discouragement caused by non-fulfilment of well-grounded expectations of success, have met with a rich lead of gold of an apparently extensive character. The discovery is held to be of the most important character in consequence of the ground being adjacent to mines from which almost fabulous yields have been previously returned. The wash-dirt was found in the north-west portion of the company's mine, and as it was said to come from the Hand and Band claim, it is confidently hoped that in the ground to the west and north-west of Ballarat, continuations of some of the old leads of Ballarat will be found. There have been also very encouraging accounts from other divisions of the Ballarat mining district during the past month. At Clunes, the Lothair Company have exceedingly good prospects from a quartz lode in their claim, which is 16 feet thick, with gold well distributed throughout. Formerly this company, then known as the Ballarat and Clunes Alluvial, struggled hard to achieve success, but it had to be dissolved. It was argued by some of the shareholders in the original company that there were good indications of rich lodes to be found in the alluvial of the claim, and that if a search were made for these, they would be sure to be found without much trouble or expense. Whether the directors or the mining manager ever did look for them, or neglected to do so, matters very little now; they were not found until the mine had passed away from its then owners to its present, who have developed it so far as to raise its value in the market, on its merits, to about 70,000*l.*, the whole claim and machinery on it at the time it passed into the Lothair having been purchased for about 2000*l.* or less. The success of the Lothair Company has drawn renewed attention to the Clunes district, and has caused a rise in the price of other mines there, as well as a strong desire to form new companies to prospect the land. This spirit of enterprise, though it may be carried to excess, will probably result in much good to the country, because there are great numbers of practical miners who have long adhered to the opinion that the Clunes district is very rich in auriferous quartz lodes, and that it has never been properly opened up, that is, not sufficient to admit of any one judging of its riches. The improvement referred to in the mining prospects of Ballarat and its divisions has caused a great increase of business in mining shares; and the Corner, where dealers in

mining stock used several years ago to congregate in such large numbers, is said to have nearly regained its former importance as a mining mart.

At Sandhurst, too, a most extraordinary increase in the market value of a mining company's property has taken place during the past month. When the last mail left here the shares of the Great Extended Hustler's (Sandhurst) Company were quoted at 13*l.* 10*s.*, and 13*l.* 15*s.*, and within a very few days they rose to 18*l.* and 19*l.*, about which prices they are still quoted, the present rich yields, combined with the certainty of there being stone in the mine that will furnish work for years to come, having rendered the shares of the company one of the most desirable investments for our capitalists. The Great Extended Hustler's Tribute Company, No. 1, which has a lease for a period of years of some ground belonging to the former-named company, continues to furnish those enormous fortnightly cakes of gold, which, since October last, when the reef in the claim was struck, have proved the mine to be perhaps the richest ever discovered in the world. The last two fortnightly returns were respectively 2694 oz., and 3246 oz., and the mine is reported to look as well as ever. Property on the Hustler's line of reef, which three years ago was marketable at something not exceeding 28,000*l.*, now represents, taking the present price and the dividends paid together, upwards of 1,000,000*l.* sterling. The sum seems very large, but those who are thoroughly conversant with mining, who have visited the magnificent hill on which the claims are situate, say that the prospects in every way warrant the highest price yet paid for these stocks. The present appearance of the two claims named has caused shareholders, in all the claims north and south of them, to feel a greater desire, not only to hold their present interests, but to increase them considerably, and this has made many of the claims that have no gold in sight to rise rapidly in estimation. The returns from the other dividend-paying mines of Sandhurst continue good, and a large amount of prospecting is being carried on in new claims. Altogether, Sandhurst is very prosperous, business of all kinds having increased, and the value of freehold property in the town having risen to a large extent.

The district about Stockyard Creek and Port Albert in the Gipp's Land division of the colony has thoroughly established its claim to be classed as auriferous. Reports of good yields being still obtained from some of the claims on Stockyard Creek and of the finding of new ground among the hitherto unexplored country around are received from thence, and the importance of these reports is great from the fact that, coming as they do from a part of the colony some considerable distance from any other established gold-field, they show that there is still, perhaps, as much virgin gold-bearing soil in

Gipp's Land alone as has hitherto been worked in the whole of the gold-fields of the colony.

The gold mining statistics of the colony for the quarter ending March 31, compiled from the reports of the mining surveyors and registrars, have been recently published. It appears from them that the number of miners employed on the various gold-fields during the quarter was 55,624, of whom 24,753 Europeans and 14,399 Chinese were engaged in alluvial mining, and 16,378 Europeans and 94 Chinese in quartz mining. Comparing these figures with the corresponding statistics for the previous quarter, it appears there has been a decrease of 2655 in the total number of miners engaged at work. The miners were distributed in the various districts in the following proportions:—Ballarat, 13,135; Beechworth, 7788; Sandhurst, 8696; Maryborough, 10,908; Castlemaine, 8776; Ararat, 3155; and Gipp's Land, 3166. The approximate value of all the mining plant was 2,041,037*l.* The number of square miles of auriferous ground actually worked upon was 1006½, of which 136 were in the Ballarat district, 253½ in the Beechworth district, 140½ Sandhurst district, 78 Maryborough district, 166½ Castlemaine district, 82½ Ararat district, and 150 Gipp's Land district. In the Ballarat district 192 distinct reefs were proved to be auriferous, 789 in the Beechworth district, 711 Sandhurst, 525 Maryborough, 590 Castlemaine, 73 Ararat, and 471 Gipp's Land. The estimated yield of gold was 336,521 oz. 18 dwt., 171,851 oz. 10 dwt. of that being from alluvial, and 164,670 oz. 8 dwt. from quartz mining. The following is an abridgment of some of the most interesting items in the reports supplied by the Government mining registrars and surveyors:—From Ballarat the registrar of the central division reports that the gold obtained from alluvial claims during the quarter was 35,788 oz., of which 12,450 oz. was credited to the Band and Albion Consols Company; 3591 oz. to the Hand-in-Hand and Band of Hope Company, and 2956 oz. to the Prince of Wales and tributors. The registrar of the southern division stated that intense dullness prevailed. At Buninyong there was a slight increase in the return of gold as compared with the December quarter. At Smythesdale mining prospects were brighter. The returns from the Creswick division were about the same. Encouraging reports were received respecting quartz mining at Steiglitz, and two new reefs were discovered in the Blackwood division. The registrar of the Beechworth division reported that considerable attention had been given to quartz mining, and that associations had been formed in Beechworth and Stanley to test the quartz reefs in the vicinity of those towns. Fifteen new reefs had been discovered in the Buckland division of

(Continued on page 4.)

EXTRACTS FROM DICKER'S AUSTRALIAN AND LONDON GAZETTE.

antimony ore were obtained. The underlie shaft has been sunk 12 feet; total depth from surface now 542 feet. The ground is good for sinking, and the lode 15 inches wide, composed of quartz, gold, and a little antimony ore.

June 14th.—During the past fortnight 63 tons of stone yielded 21 oz. 4 dwt. of gold. 60 tons of antimony ore were obtained. The underlie shaft has been sunk 18 feet in soft ground, but a hard bar has now come in. The shaft is now down 568 feet from surface, and it is proposed to sink other 60 feet.

HOPE, WOOD'S POINT, May 27th, 1872.—The yields during the fortnight are: Tributors' stone, 246 tons 39 oz. 14 dwt. gold; company's stone, 112 tons 45 oz. 39 oz. Two of the batteries are since employed crushing gold. The stone from the batteries is crushing the stone for No. 3 Tributors, and one battery is crushing the stone raised by the company. The stone from the new reef below the 30 feet level has shown very fairly, but that from the spur below the middle reef has been poor. There is, however, a probability of an improvement on this, and it is consequently desirable to continue breaking it; the shaft has been sunk 2 feet during the past week, making a total depth of 131 feet 6 inches. There is no sign of the reef as yet, and no change in the sinking.

NEW NORTH CLUNES, May 30th.—No. 1 level.—The drive north on the new lode is in 278 feet; the lode has got small and does not look quite so well; the south end is in 230 feet; the lode here is the same as last reported. A prospective drive is being put in to the west; the quartz in winze continues to look very well. No. 2 level.—The rise at the back of this level is up 54 feet. No. 6 level.—The west cross-cut is in 177 feet; the country is still hard; the north drive is in 67 feet, without improvement in the lode during the fortnight. No. 7 level.—The west cross-cut is driven 272 feet from shaft; the country still very hard; the south drive is in 202 feet, the lode at present being 3 feet wide and payable. The north end is driven 211 feet from cross-cut; the lode looks much better than last reported, there being a new splice forming on the back of the lode, in which, though narrow as yet, a good quantity of gold can be seen, and the quartz is of a much better appearance. The pump shaft is sunk 172 feet below No. 7 chamber; the country is still very hard.

NEW ZEALAND MINES.

ALBION GOLD MINING COMPANY.—Gold Returns.—April 19th to 15th May, Albion Tribute (Powerby) 35 tons of stone, yielded 392 oz. 10 dwt.; Kelly's, 46 tons 10 cwt., yielded m. 263 oz. 7 dwt.; Belfast, 15 tons yielded m. 17 oz. 6 dwt. 4 grs.; May 15th to June 12th, Albion Tribute, 35 tons yielded m. 529 oz. 3 dwt. 12 gr.

SHOTOVER GOLD MINING COMPANY, May 14th, 1872.—In driving on the main level towards the old lode, several solid veins, from a half to two inches wide, of iron pyrites, and a small proportion of copper, have been met with, and these bind the country so tight that it is difficult to shoot. For the last ten feet water has come in freely, giving one the impression that the lode is not far distant. In the direction of the All Nations the level is in 70 feet, the country being very good, with 100 feet farther to go before getting up to the boundary. The level towards the Long Drive is now up to that company's boundary, with no signs of any lode beyond what was cut at 97 feet from the shaft, and upon which the manager is driving to get out a crushing, so as to test its value. This latter level is thoroughly well timbered, with a tramway laid to the boundary, so that the Long Drive Company can at any time carry the level to any portion of their mine they may think proper.

IMPERIAL CROWN GOLD MINING COMPANY, May 14th, 1872.—United Pumping Association.—The influx of the water during the past twelve days has been heavy in comparison to what it was, and it is thought the time is close at hand when the erection of the large engine must be proceeded with. At the same time the present influx is not sufficient to deter them from sinking, provided none of those casual breakages occur, which all pumping gear is liable to, and which was exemplified in the Caledonian and others. These temporary accidents often cause a delay of several hours, and it is then that the water gets so far ahead that it takes a long time to beat it. It is better that the present lifts shall be sunk with as long as possible, for it is far cheaper, and with double the speed, to sink with a 12-inch lift at the bottom than a 25 inch, which would be the size of the new one. The present depth of the shaft is 305 feet, so by survey the main lode should be cut in it at a farther depth of about 30 feet. The boilers are now set and built in, and the other machinery in connection with the new plant so far advanced, that should the present power be found inadequate to master the water when they got farther down, the stoppage for the erection of a new engine for sending down of lifts would be of short duration, and I think that within a month of the day of stoppage we should see the largest pumping plant in the southern hemisphere fairly at work.

May 30th, 1872.—The shaft is sunk to a depth of 300 feet, being within 33 feet of the estimated depth at which the main lode will be cut, and about 27 feet measuring towards the shaft at a right angle. During the last few feet the water has gradually increased, and at this depth it is found to be too heavy for the present machinery to force to allow of sinking; therefore it is deemed prudent to suspend sinking, and proceed at once with the fixing of the large lift and erection of engine. The works on the surface this morning present a very busy scene, large numbers of men rolling towards the mouth of the shaft large pipes and workings of the draw lifts, which latter must be put in position before the present lifts are withdrawn, and the water allowed to rise. It is probable that in about six weeks from to-day the start of the large engine may be looked forward to, and then Tookey,

Caledonian, and Imperial Crown may expect soon after to develop their mines at a much lower depth than hitherto. The engine was expected to be at work in about a month from last date, and then they would have 20 feet to sink before opening out. They have just stopped operations to dismantle the old pumping gear.

Gold Returns.—Imperial Crown Tribute Company.—April 19th to May 15th, 15 tons of stone, yielding 28 oz. 12 dwt. 6 gr.; May 15th to June 12th, 18 tons of stone, yielding 31 oz. 10 dwt. of gold.

CALEDONIAN GOLD MINING COMPANY, May 25th, 1872.—The manager of this company lodged this morning 303 oz. retorted gold, of which about 150 oz. were obtained from the few specimens that have been broken out from the specimen vein. The small amount of gold that has been obtained from the general stuff, is accounted for by the fact that not more than forty-eight hours' work has been performed by the battery. The No. 1 winze bottom level has been thoroughly secured, and driving on the road towards Tookey, and in the direction of the proposed No. 2 winze north, has commenced in earnest, and it is to be hoped that the manager may be fortunate in picking up the last run of gold. The No. 2 reef low level is also being followed both ways; to the south it is very mullocky, while north it averages 3 feet wide, but of a very hard character. In Nos. 1 and 2 stopes, main lode, there is no change to report; a large quantity of crushing dirt is being broken away, the quality of which appears to be about the same as that of the last few weeks; the specimen vein is being gradually worked out, as evinced by the small quantity of gold obtained therefrom this week; and very shortly steps will have to be taken to test the value of the supposed vein, from which some rich stone was got a week or two ago; but until the present vein is finally exhausted, this new one will be left alone, as the ground above it has not finally settled down.

June 1st, 1872.—During the week not more than one half of the battery has been employed upon the general stuff, and with this has been crushed a few choice specimens, which gives 244 oz. of retorted gold. This being the end of the month, the weight of melted gold was made up, and amounted to 2134 oz., to which must be added the yield of to-day, which will lose very little in melting, so that the yield may be set down as 2378 oz. of gold. With regard to the telegram forwarded on Saturday, reporting the find of specimens in the old specimen leader, and also in the same leader north of No. 4 winze, I think from what I can gather that it is perfectly correct, for on visiting the mine this afternoon, I find that some 10 feet of the old specimen leader was left standing, not between Nos. 1 and 2 winzes, upper level, as stated, but south of No. 2 winze; at the present moment there is a fine show of gold over the whole of the leader, though there is very little of it to beat away, still it may be productive of several hundredweights of good specimens yet. It is well known that this specimen leader junctions with the main lode between the two levels, and a little to the north of the No. 4 or Otago winze. Men were set to stope it up, and in doing this, on Friday night, a little gold was come across; and as this leader has been very barren of precious metal going north of No. 1 winze, it is very encouraging that the leader is now showing more quartz than for some distance back. With regard to Nos. 1 and 2 stopes, I see no change whatever, so pass on to the new low level that is just being opened up. The No. 1 winze is down 40 feet below the present bottom, or low level, and at this depth they have commenced to open out both ways, and are in several feet towards the Tookey, where the reef is all that can be desired, being very large and compact, while to the north it is the same, three feet of solid stone near to the foot-wall, while the whole width is several feet. The quality of this lode at the bottom, the manager states, has not been tested separately, but I am bound to say that I have heard more than once that it is worth 11 oz., which is infinitely superior to the present main level. A No. 2 winze has also started north of the cross-cut in main level, and this will be down about the time that the level from No. 1 winze has reached immediately under. The former manager, in cutting out the chamber of the present main level opposite the shaft, uncovered a small vein of gold, and now the present manager has sent up a rise on it, so that the stuff from No. 2 stope can be sent down, and in so following the vein some very nice gold has been occasionally seen, but no work has yet been done in developing it, with the exception of the rise.

Gold Returns.—19th April to 15th May, 852 tons, yielding 2844 oz. 10 dwt. of gold; 15th May to 12th June 700 tons, yielding 1096 oz. of gold. Dividends during the month of May, 2s. 6d. per share, 5720s.; dividends during the month of June, 3s. 6d. per share, 8580s.

KURANUI GOLD MINING COMPANY, June 1st, 1872.—This company have had thirty hands employed during the past fortnight upon stuff that has been got from various levels and lodes; in fact the manager is fossicking wherever he can find paying stuff, and for this fortnight is rewarded with 161 oz. retorted gold.

Gold Returns.—April 19th to May 15th, 550 tons of stone, yielding 236 oz. 14 dwt.; June 12th, 600 tons of stone, yielding 421 oz. 3 dwt. of gold.

ALBURNIA GOLD MINING COMPANY, May 16th, 1872.—The contractors in the tunnel, going in from the back of the machine, resumed work a day or two ago, and will lose no time in pushing it ahead as quickly as possible, so as to communicate with the shaft, which is a considerable distance off, the specimen leader being fully 160 feet ahead. The Sons of Freedom reef, that was gone through in the tunnel, has been driven upon for 10 feet, near to the hanging wall portion, and 10 tons of this went into the mill this morning for trial. In the mine, the principal work is confined to various portions of the specimen leader and main lode, but I am sorry to record that the crushing for the present fortnight is below the usual average. The leader is being stoped east from the junction

with the main lode, and is only small in size and devoid of those occasional patches of specimens that tell so well in crushing. On the main lode, stoping is being carried on above the old workings and near to the surface, while a rise from the main adit is going up between the North Devon shaft and underlay winze, also a block of ground in the bottom level, close to the lode, where it branches into two; other veins from the hanging wall of the lode are being followed, but with no better success than is just now apparent throughout the other portions of the mine. Until the tunnel communicates with the shaft, every effort will be made to clear expenses, but much beyond that I never expect, as the best of the known paying ground has been taken out; but this low level will bring them immediately under the vein of gold that was so rich a few feet below the present low level.

June 1st, 1872.—The manager of this company retorted the amalgam that had accumulated from the crushing of 300 tons dirt, and the result is 210 oz. retorted gold. This stuff is taken from various stopes of the leader and main lode; in fact, wherever it is thought that payable gold is left; and this will continue until the low level crosscut is up to the shaft. This tunnel or crosscut is in better ground than it has been for some time, being let at the rate of 30s. per foot, and every effort is being made to push it ahead with the utmost speed, consistent with the safety of the ground. The vein that is being worked close behind the battery shows a little gold, and upon it a rise is going up.

Returns.—April 19th, to May 15th, 300 tons of stone, yielding 271 oz. 1 dwt. of gold; May 15th to June 12th, 300 tons of stone, yielding 207 oz. 6 dwt. of gold.

THE TOKATEA GOLD MINING COMPANY, May 16th, 1872.—No. 3 level still continues to turn out stone showing gold fairly, although the reef is still a little broken up. In No. 1 winze they are still sinking and carrying the gold down with them; the water is very troublesome, and impedes the work very much. The battery is steadily at work crushing, and the yield is quite up to the average of the previous crushing. The Tokatea sent to the bank on Friday evening 322 oz. of retorted gold, the result of eleven days' crushing from 148 tons stone; there were no specimens in this lot. The Whakarua battery is now in first-rate order, and does its work well. All the tables have been taken up, altered and re-levelled, and one of them lengthened; new iron frames for the gratings have been put into the four-stamper battery, and the whole machinery has been thoroughly overhauled. The mine continues to yield as well as ever. The reef in the low tunnel is turning out some very good stone; and from No. 1 winze they are still carrying the gold. In No. 2 winze the water is still so heavy that no progress has been made during the week with the sinking.

May 25th, 1872.—The mine continues to yield exceedingly well. In the low level the reef has been considerably broken up, but now it shows signs of making again, and gold is visible in several of the stringers in the face of the drive. They have now about 15 feet farther to drive to come under No. 1 winze. In No. 1 winze they are down 155 feet, but have about 15 feet more to sink before breaking through into the drive; gold is still being carried down in this winze. In No. 2 winze the water still continues so strong that they are obliged to discontinue working it. About 200 lbs. of fine specimens were obtained from the stopes in the upper workings up to Saturday; and as the show still continues in the face, another good haul is expected. In the Tokatea the works are being carried on as usual under the management of Mr. Kelly. The lower level shows some improvement, and gold is visible in Reef No. 2; the lower level has been advanced to within about 15 feet of the winze, which is being sunk from the tramway, the adit of which is just above the tramway; the farther winze in the middle level is being bailed out.

The Tokatea sent down from the Whakarua battery 190 oz. of gold, the result of the previous week's crushing, making a total of 510 oz. now in the bank. The reef in the lower level is making again, and a portion of it is now solid and defined. The mine looks extremely well, and there are now 600 lbs. of good specimens on hand, waiting to be crushed.

June 11th.—The stuff at present being put through the mill is looking first-rate, and a handsome retorting is likely to be reported in the course of a few days.

Gold Returns.—April 19th to May 15th, 447 tons of stone, yielding 1282 oz. of gold; 384 tons of stone, yielding 1345 oz. 18 dwt. Dividends during month May, 5s. per share, 5000s.

The total value and quantity of gold taken out of the Tokatea Coromandel Mine, for a little over twelve months, was:—

1871	tons	oz.	dwt.	£	s.	d.
April	131	711	5	1,991	10	0
June	336	2205	0	6,354	10	0
August	344	3569	14	10,069	10	7
October	370	2692	14	7,765	4	9
December	978	3993	0	11,438	8	7
1872						
February	1138	1794	0	4,968	1	10
April	687	1948	18	5,708	14	4
Total	3958	16794	11	48,340	0	1

During the same period, not less than 34,500s. was paid to the shareholders.

TOOKEY, AUCKLAND, May 30th, 1872.—During the month no sinking has been done in the main shaft, owing to the water being too heavy, and the contractors having thrown up the contract. It is not probable that any attempt will be made to sink any further until the United Pumping Association plant is erected, and the reef cut in that shaft. It is quite apparent that any attempt made to sink until that is accomplished would prove unsuccessful.

EXTRACTS FROM DICKER'S AUSTRALIAN AND LONDON GAZETTE.

Gold Returns.—Tookey's Tribute Company.—April 19th to May 15th, 98 tons of stone, yielding 151 oz. 13 dwts. 12 grs.; May 15th to June 12th, 100 tons of stone, yielding 134 oz. 15 dwts. gold.

GOLDEN CROWN, Friday, May 17th, 1872.—The manager of this company brought in to-day 73 oz. retorted gold, the result of a crushing of 70 tons of dirt from various parts of Nos. 1 and 2 lodes. The tributors also lodged a fine return of 124½ oz. being the weight of gold obtained from 75 tons broken out of the vein in the No. 1 level, which has turned out so well during the whole of the tribute.

June 1st, 1872.—The company have put through this week no less than 50 tons from the two lodes, and the result is much more satisfactory than for some time back, being 51 oz. retorted gold. On the other hand, the tributors have not done so well from the leader they have been working so successfully of late, having crushed 65 tons for 48 oz. retorted gold.

Gold Returns.—Golden Crown.—April 19th to May 15th, 200 tons of stone, yielding 130 oz. 3 dwts. 2 grs.; to June 12th, 130 tons of stone, yielding 77 oz. 17 dwts. 12 grs. gold.

Golden Crown Tribute Company.—April 19th to May 15th, 120 tons of stone, yielding 273 oz. 8 dwts. 6 grs.; to June 12th, 107 tons of stone, yielding 101 oz. 9 dwts.

PRINCE IMPERIAL, May 14th, 1872.—The manager of this company has now five heads of the Waiotaki Association Company battery at work upon a lot of dirt that has been broken out from the No. 1 leader, back of the 100 feet level, and I am bound to say that the show on the tables up to the present is superior to what I have seen from the mine for many months.

May 25th, 1872.—The crushing for this company fell off in quality very much towards the latter end, which the manager reports was occasioned by the men stripping down the main lode, where the No. 1 leader came in contact with it; also, that a portion of the main lode from the new winze being sunk in the old Mariner's ground, from the 100 feet level downwards, did not come up to the average of the No. 1 leader. The stone from the latter was going through the mill when I last reported the good show. The total quantity of stone crushed is 70 tons, from which a yield of 56 oz. of retorted gold has been obtained.

Gold Returns.—April 19th to May 15th, 70 tons of stone, yielding 61 oz. 6 dwts.; to June 12th, 80 tons of stone, yielding 58 oz. of gold.

NOTE—With regard to the progress of most of these undertakings upon the Thames gold fields, they are all more or less dependent upon the completion of the works of the United Pumping Association. The pumps, it is expected, will be at work in about another month's time, when 20 feet of the shaft will have to be sunk before they open out to intersect the several lodes, and so drain them. This, however, will not take long, and we may then look for a great improvement in mining operations upon this gold field.

GOLD AND THE GOLD FIELDS.

(Continued from page 1.)

the Beechworth district. The registrar of the Sandhurst division reported that mining in his division was in a very prosperous condition during the quarter, the quantity of gold purchased by the banks and the average yield of the quartz being higher than in any previous quarter. Great additions had been made to the machinery. The yield from the Great Extended Hustler's Tribute was 23,159 oz., or at the rate of 8 oz. 12 dwts. 10 gr. per ton. At the Alma and Chinaman's flat, in the Maryborough district, all the deep mines which were being fully worked were yielding excellent returns, and held out splendid prospects for shareholders. The United Kingdom Company had found three rich reefs in their alluvial claim at Majorca at a depth of 100 feet from the surface, and below the alluvial workings. These reefs were severally named the Sunburst, the Star, and the Eastern. A crushing of 28 tons of stone from the Sunburst gave a return of 79 oz. 8 dwts.; 30 tons from the Star gave 20 oz. 7 dwts., and 42 tons from the Eastern gave 28 oz. 5 dwts. The highest yield during the quarter was from the Ironstone Reef, Craigie, from which a crushing of 82 tons gave 400 oz. 11 dwts. 18 gr. The reports from the Castle-maine and Ararat districts did not contain anything of very special importance. From Gipp's Land, the registrar of the Stockyard Creek division reported that mining operations had been carried on briskly. Quartz mining had been much stimulated by the splendid results of the crushings from the African, Golden Age, and Ophir claims. With respect to alluvial mining the registrar reported that the prospecting claim still continued to yield magnificently, gold being turned out in pounds weight rather than ounces.—*Argus*.

The North Costerfield Gold and Antimony Mining Company. No Liability. Costerfield, near Bendigo, Victoria, Australia.

Capital 50,000l. in 50,000 Shares of 1l. each.
Paid up 10s. per Share, viz.:—
20,000 Shares of 1l. each, 10s. per Share paid,
= 10,000l. allotted in the Colony.
30,000 Shares of 1l. each, 10s. per Share paid,
= 15,000l. to be allotted in England.

50,000 Shares. 25,000l. called up.
The London Agent has instructions to offer the above parcel of 30,000 Shares:—

2s. 6d. per Share to be paid on Application;
2s. 6d. on Allotment; and 5s. in Three Months after Allotment. The Balance, if required, in Calls not exceeding 1s. per Share per month.

It is estimated, however, that 10s. per Share will be quite sufficient for all purposes of the undertaking.

Directors in the Colony.

Robert Burrowes, Esq., M.L.A., Member of the Legislative Assembly for Sandhurst, Bendigo.

Thomson Moore, Esq., M.L.A., Member of the Legislative Assembly for Mandurang, Bendigo.

Samuel P. Lord, Esq., J.P., Melbourne.

D. A. Osborne, Esq., Melbourne.

Dr. Fitzgerald, Melbourne.

William Gardiner Sprigg, Esq., Melbourne.

London Agent.

Thomas Dicker, Esq. (formerly Editor and Proprietor of *Dicker's Mining Record*, Melbourne.)

Offices.

4, Royal Exchange Avenue, London, E.C.

The object of this Company is to work the extensive property known as the North Costerfield Mine, for both gold and antimony. Its area is 25 acres 2 roods and 4 perches, with a length on the course of the lode of 1613 feet.

The Mine adjoins the well-known Costerfield property. The lode runs between solid and well-defined walls, without fault or break, and bears the reputation of being the finest Antimony lode in the world.—*Vide Report of J. Brache, Esq., Civil and Mining Engineer, late Superintendent of Mining Surveys to the Geological Department, Melbourne.*

This Company is registered in Melbourne under the "No Liability" clause of the "Limited Liability" Act of the Colony of Victoria, which limits the amount to be called up to 1l. per Share.

Plans and prospectuses with the fullest information may be had, and samples of ore taken from both mines can be seen, upon application to the London Agent (who has personally inspected the lode), 4, Royal Exchange Avenue, London, E.C.

NOTE.—August 8th, 1872.—The news from the adjoining mine this mail announces the fact that the month's yield of antimony has increased in three months from 50 tons to 113 tons.

AUSTRALIAN & NEW ZEALAND DIVIDEND GOLD MINES INVESTMENT CO. (Limited).

No. 1, No. 2, and No. 3 SERIES.

Shares can be obtained in each of No. 1 and No. 2 Series. Apply at 4, Royal Exchange Avenue, E.C.

No. 3 SERIES.—A small balance of these Shares to be had at par.

AUSTRALIAN AND NEW ZEALAND DIVIDEND PAYING AND PROGRESSIVE MINES.

Full and reliable information, with list of sound mines for investment, may be obtained on application to Thomas Dicker (late Editor and Proprietor of "Mining Record," Melbourne), 4, Royal Exchange Avenue, London, E.C.

DICKER'S AUSTRALIAN AND LONDON MINING AND GENERAL AGENCY.

4, ROYAL EXCHANGE AVENUE, LONDON, E.C.

List of Shares for sale in Australian and New Zealand Mines, under limited liability.

Mariner's Reef (Gold) Quartz Mining and Crushing Company.

The Winter's Freehold Gold Mining Company, Limited, Ballarat, Victoria.

Australian and New Zealand Dividend Gold Mines Investment Company, Limited, No. 1, No. 2, and No. 3 Series.

Golden Crown Gold Mining Company, Limited, Thames River, Auckland, N.Z.

The London and Thames River, N.Z., Golden Crown Company, Limited.

The Imperial Crown Gold Mining Company, Limited, Thames River, Auckland, N.Z.

Albion Gold Mining Company, Thames River, Auckland, No. 3.